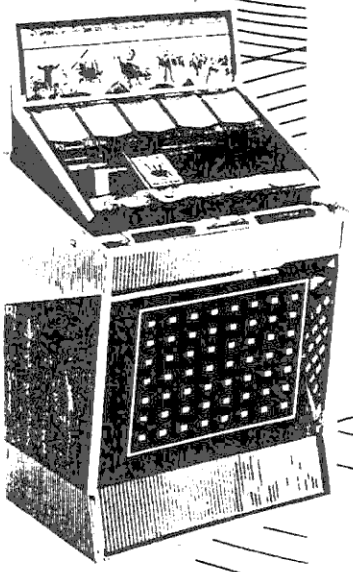
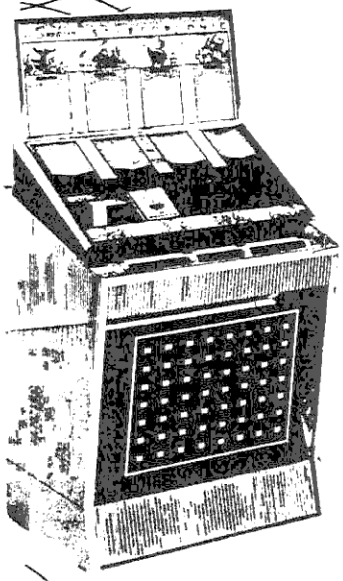
SEEBURG

Phonograph
INSTALLATION MANUAL



Q100



Q160

THE SEEBURG CORPORATION
CHICAGO 22, ILLINOIS
NO. 484587

The Select-O-Matic Q100 and Q160 Models differ mainly in the record capacity and in the resultant program holder arrangement and selector key panel. The Q100 Model provides for 100 selections; the Q160 Model is for 160 selections. Optional features are the coin equipment, remote control facilities, monaural or stereophonic audio system, Accumulative Credit Unit, Dual Pricing Unit and a 33-1/3 rpm. Auto-Speed Unit.

The following table provides a suffix reference identifying code symbols:

Table 1. Description of Suffixes For Model Numbers.

SYMBOL	DESCRIPTION
M	MONAURAL
S	STEREOPHONIC
H	½ DOLLAR PRICING UNIT
R	REMOTE CONTROL FACILITIES
A	ACCUMULATIVE CREDIT UNIT
D	DUAL PRICING UNIT
2	33-1/3 RPM. AUTO-SPEED UNIT

EXAMPLE:

The nameplate states "Model Q160"SHRA2". This indicates a phonograph which has 160 selections, the stereophonic audio system as indicated by "S", a 5-10-25-50 pricing unit as indicated by "H", 3-wire remote control facilities as indicated by "R", Accumulative Credit Unit "A" and a 33-1/3 RPM. Auto-Speed Unit "2".

INSTALLATION AND OPERATION

Damage Caused By Shipping

Examine the instrument immediately after unpacking. If any damage is found, notify the transportation representative.

Cabinet Lid Support (See Figure 2)

The Cabinet Lid Support Rod is permanently attached to the Cabinet Lid and concealed in the Phonograph Cabinet Lower Compartment when the lid is down. It is withdrawn by raising the cabinet lid. A notch in the Support Rod hooks into a Latch Plate and locks when the weight of the raised lid bears on it.

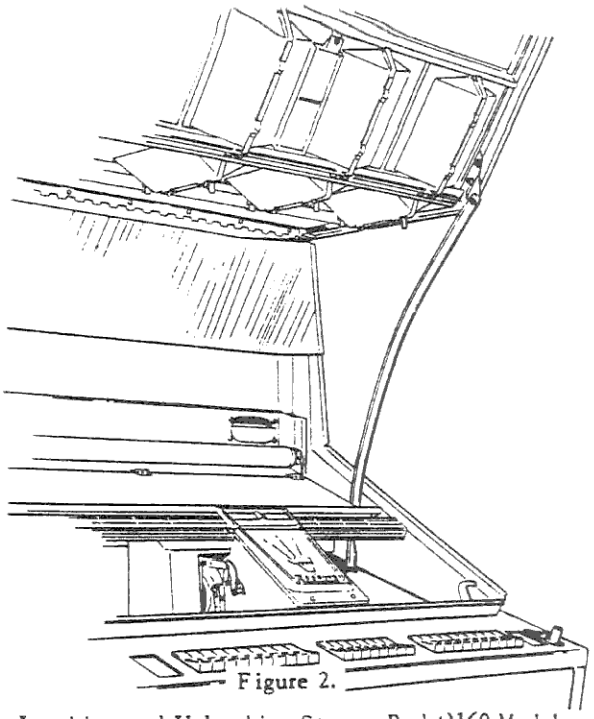


Figure 2. Latching and Unlatching Support Rod. Q160 Models.

CAUTION: BE CERTAIN THAT THE SUPPORT ROD IS FULLY ENGAGED IN THE SLOT BEFORE THE LID IS LOWERED. DO NOT MOVE THE CABINET WHILE THE LID IS RESTING ON THE SUPPORT.

To unhook the Support Rod from the Latch Plate lift the lid and press the Support Rod toward the back of the Cabinet.

Unblocking

Before placing this Phonograph in operation, it is necessary to remove or loosen shipping hardware. Carefully follow instructions on the tags and remove blocks and shipping supports accordingly.

CAUTION: DO NOT ATTEMPT MECHANISM OPERATION BY MANUALLY TURNING THE FLYWHEEL; THIS MAY DAMAGE THE MECHANISM. USE THE SERVICE SWITCH.

NOTE: DO NOT PUT PACKING BLOCKS, INSTRUCTION CARDS, OR ANY OTHER MATERIAL ON THE AIR INTAKE SCREEN IN THE FLOOR OF THE CABINET, AS THIS WILL OBSTRUCT VENTILATION AND CAUSE OVERHEATING. OVERHEATING WILL WARP RECORDS AND SHORTEN THE LIFE OF THE EQUIPMENT. STORE BLOCKING MATERIAL FOR FUTURE USE.

Tubes and Plugs

This instrument is shipped with tubes and plugs installed .See that they are firmly seated in the sockets before inserting the line cord.

Voltage rating

Before connecting the line cord make certain that the voltage and frequency agree with the markings of voltage and frequency on the Phonograph Nameplate.

Placing the Select-O-Matic

To obtain best performance and long service from this equipment, it should be placed on a firm, reasonably level floor away from excessive moisture and heat.

WARNING: TO PREVENT WARPING RECORDS PLACE PHONOGRAPH WHERE THE RECORDS WILL NOT AT ANY TIME BE EXPOSED TO DIRECT SUNLIGHT OR ANY OTHER RADIANT HEAT. DO NOT REDUCE VENTILATION BY OBSTRUCTING THE VENT SCREENS.

A space of at least two inches must be allowed between the back of the cabinet and the wall, to assure adequate ventilation.

Electrical Selector Panel (See Figure 3)

The Service and Manual Credit Switches are mounted on the left hand side of the Cabinet directly behind the Tormat Electrical Selector.

The Service Switch is removed by loosening two wing nuts holding its bracket to the cabinet wall.

Service Switch Operation

A three-position Service Switch is located as shown in *Figure 3*. When the switch lever is moved to the "SCAN" position, (to the left, against the spring return), and permitted to return to center position, the Mechanism will scan past selections previously set up and come to rest at the right hand end of the base.

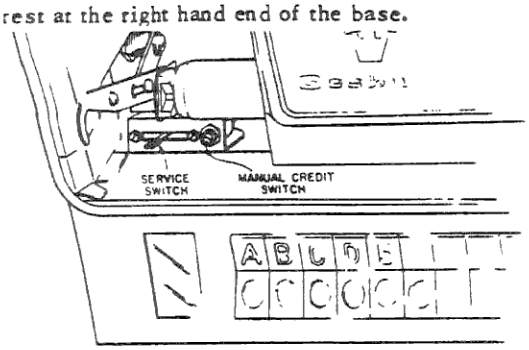


Figure 3 . Electrical Selection Panel.

With the Mechanism scanning and the service switch in center position, the Mechanism may be stopped at any point of travel by pressing the Manual Credit Switch twice. (*See Figure 4.*)

The Service Switch must be set to the right of center position for normal operation of the Phonograph.

Manual Credit Switch

With the Service Switch (*See Figure 3*) held in "SCAN" position, a credit is obtained when the

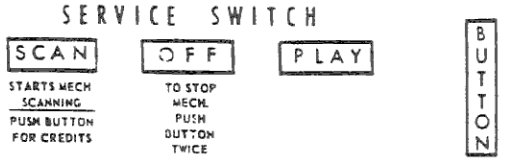


Figure 4. Service Switch Operating Instruction Plate.

Manual Credit Switch is depressed and a selection may be made after the Service Switch is returned to "PLAY" position.

Loading Records

To obtain the optimum performance it is necessary that only new or nearly new records be used . Only standard 7-inch commercial records may be used.

Push up the Main Switch (accessible on upper right hand side of rear door) to the "ON" position . Scan the Carriage to the right hand end of its base as described in Service Switch operation.

Starting at the left end of the magazine insert one record in each record space . The top row selections on the Indicator Panel refer to the left side of the records and the bottom row to the right side of the records . Thus A1, C1, E1, G1, J1, L1, etc., all will be left sides, and B1, D1, F1, K1, etc., will be right sides of records on the Q 160 Models.

A1, B1, C1, D1, etc., are left hand sides of the records. A2, B2, C2, etc , are right hand sides of the records on the Model Q 100.

CAUTION: DO NOT FORCE RECORDS INTO RECORD SPACES! ANY NORMAL RECORD WILL ROLL VERY FREELY INTO THE RECORD SPACES. A RECORD WHICH IS WARPED BADLY ENOUGH TO HAVE ANY TENDENCY TO BIND IN THE MAGAZINE SPACE WOULD NOT BE PROPERLY PLAYED IN ANY AUTOMATIC MECHANISM AND SHOULD NOT BE USED .

When the left half of the magazine has been loaded scan the Carriage to the left end of the base and load the right half of the magazine. (After the magazine has been loaded, set the Service Switch to the "PLAY" position toward the right of the cabinet.).

CAUTION: OCCASIONALLY RECORDS WILL BE FOUND THAT HAVE AN UNDERSIZE CENTER HOLE. THIS IS CAUSED, IN SOME CASES, BY THE PAPER LABEL BEING PUSHED INTO THE CENTER HOLE. IF THE RECORD CENTER HOLE IS UNDERSIZE IT MAY STICK ON THE RECORD PIN.

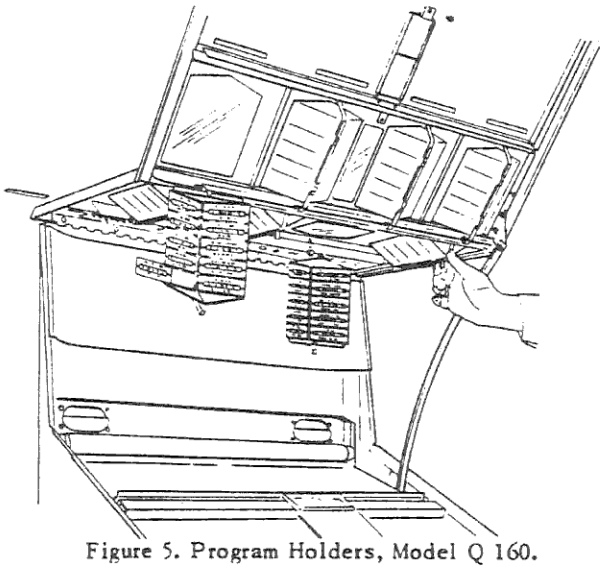


Figure 5. Program Holders, Model Q 160.

Program Holders

The Program Holders are shown in *Figure 5*. The holders on the lid of the cabinet can be lowered by releasing the retainer springs and relatched by pressing the springs back into place. A complete supply of blank and stereophonic title strips (with stereophonic only) are supplied and will be found in the cash bag.

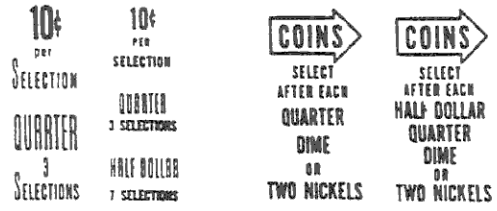


Figure 6. Pricing Windows, Model Q 160.

Pricing Information Windows

On all Q 160 Models the pricing information is located in the center of the lower Program Holder Assemblies. The Pictorial Windows are

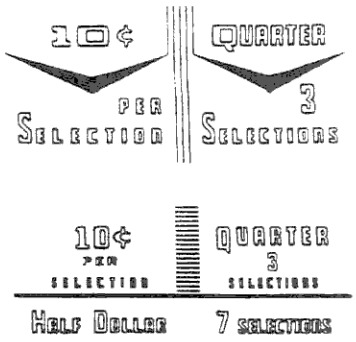


Figure 7. Pricing Windows, Model Q 100.

mounted with the upper Program Holder Assemblies. (The vertical section of the cabinet lid). Both the upper and lower Program Assemblies are equipped for programming singles only.

On all Q 100 Models the pricing information is located in the center of the Selector Key Panel. All Program Holder Assemblies located in the Cabinet Lid are equipped for programming singles only.

Figures 6 and 7 illustrates windows denoting the changes that are available.

To gain access to the Pricing Window of the Model 100 series, raise the cabinet lid. Remove lower Fluorescent Light and Pricing Window Retainer beneath Selector Key Panel.

CAUTION: DO NOT DROP PRICING WINDOW AS IT MAY BREAK.

Popularity Meter

The Popularity Meter is behind the upper Light Shield of both models. It can be exposed by raising and latching the Cabinet Lid and lifting the Fluorescent Light Shield. (*See Figure 8*). The meter consists of Indicator Wheels individually calibrated from 0 to 40 for each record and indicates the number of times each record has played.

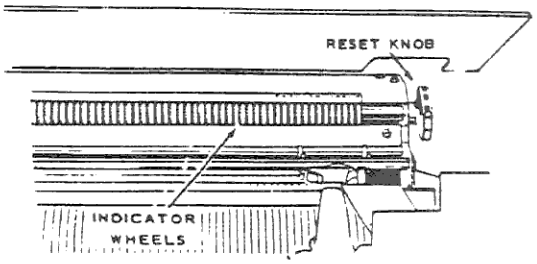


Figure 8. Popularity Meter.

The Popularity Reset Knob is located at the right end of the Popularity Meter (*See Figure 8.*) To reset, turn the knob in a clock-wise direction. Continue turning until all of the wheels indicate zero.

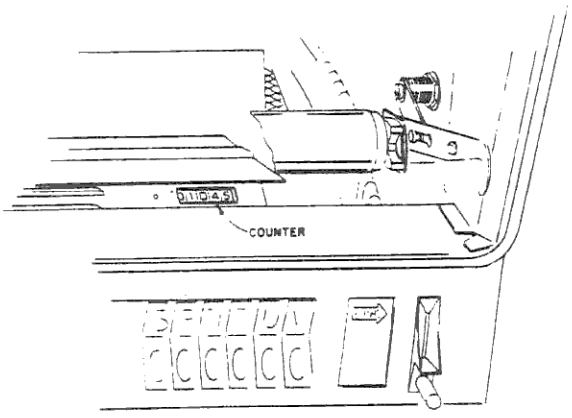


Figure 9. Location of Selection Counter.

Selection Counter

The Selection Counter is located on the upper right hand side of the Electrical Selector and beneath the Fluorescent Light. (*See Figure 9.*) By raising the Cabinet Lid it can be observed. The counter totals selections made from the Electrical Selector in the Phonograph.

If remote control is utilized the counter totals selections made from the Wall-O-Matics and Electrical Selector.

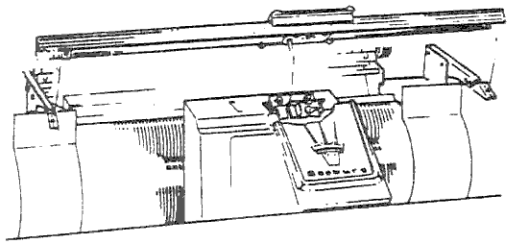


Figure 10. Removing Selection Playing

Plate & Indicator Panel.

Select-O-Matic Mechanism

The Select-O-Matic Mechanism can be removed as a unit for repair or replacement purposes in both series of models. To gain access, unlatch and open bottom rear door. Remove screws from upper access panel and lift up and latch.

To remove the Mechanism, lift Cabinet Lid and latch. Remove selection playing indicator assembly as shown in *Figure 10.*

Remove pins in mechanism mounting channels, *Figure 11.* Remove cable assemblies. Slide Mechanism from cabinet.

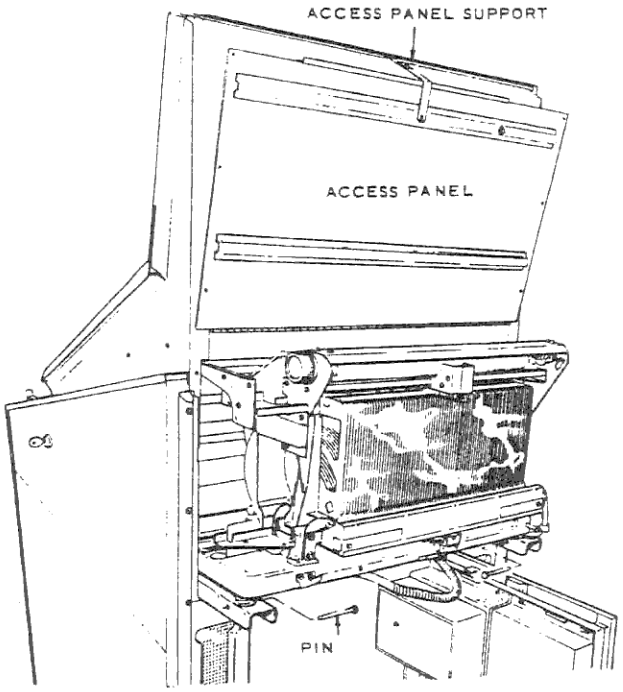


Figure 11. Removal of Mechanism.

AUDIO SYSTEM

Stereophonic

In the Stereophonic System the Seeburg Stereophonic Magnetic Pickup feeds into the Seeburg Stereophonic High Fidelity Dual Channel Audio Amplifier, Type SHFA2. The Amplifier power is applied to a Stereo Network in the Phonograph and to Stereo Networks in the Remote Stereo Speakers. This assures the correct distribution of all audio frequencies to CHANNEL 1 and CHANNEL 2 Speakers in the Phonograph, as well as to CHANNEL 1 and CHANNEL 2 Remote Speakers.

Monaural

In the Monaural System the Seeburg Stereophonic Magnetic Pickup feeds into the Seeburg High Fidelity Single Channel Audio Amplifier, Type C1HFA1.

AUDIO CONTROLS

Stereophonic

The Stereo Amplifier is equipped with dual tone controls and dual volume controls which assure simultaneous adjustment for both Channel

RECORD COMPENSATION AND TONE BALANCE SETTINGS

LOCATION CONDITIONS	CONDITION OF RECORDS					
	NEW (Good Quality)		FAIR (Average)		POOR (Worn & Scratched)	
ACOUSTICALLY LIVE — Hard walls, ceiling and floor—little or no upholstery and draperies.	BASS	3-4	BASS	3-4	BASS	2-3
	TREBLE-RANGE	4-5	TREBLE-RANGE	3-4	TREBLE-RANGE	1-2
AVERAGE ROOM — Average amount of sound deadening material.	BASS	2-3	BASS	2-3	BASS	1-2
	TREBLE-RANGE	5	TREBLE-RANGE	4	TREBLE-RANGE	3
ACOUSTICALLY DEAD—Acoustic tile, heavy draperies and carpets, upholstered booths.	BASS	1-2	BASS	1-2	BASS	1
	TREBLE-RANGE	6	TREBLE-RANGE	5-6	TREBLE-RANGE	4

ROOM SIZE — In small rooms reduce treble range one number. In large rooms without remote speakers increase treble range one number.

NOISE — The noise encountered in some locations (restaurants, etc.) has a masking effect on high frequencies. Final control settings should be made under actual noise conditions with a representative number of people present.

A.V.C. — A.V.C. compensates for average loudness variations from record to record.

NOTE: GOOD QUALITY REPRODUCTION CANNOT BE ATTAINED WITH POOR QUALITY RECORDS OR WITH WORN STYLII. REMEMBER—WORN STYLII WILL RUIN YOUR RECORDS.

Figure 12.

1 and Channel 2 audio. The keyed Master Volume Control is located on the outside of the rear door on the upper left hand side.

For High Fidelity Stereophonic reproduction the balance between bass and treble must be maintained. A Record Compensation and Tone Balance Settings Table is provided in the Stereo Phonograph Cabinet and duplicated in *Figure 12*.

MONAURAL

The Monaural Amplifier, Type C1HFA1, is equipped with single tone control and single volume control since only one channel is utilized.

SELECT-O-MATIC PHONOGRAPH SPEAKERS

Stereophonic

The Phonograph Speaker System in both series of Phonograph models incorporate two 12-inch and one 8-inch speaker connected through a Stereo Network to their respective Amplifier channel.

Monaural

The Phonograph speaker system in both series of models incorporates two 12-inch and one 8-inch speaker. Each is connected to the Amplifier, Type C1HFA1.

TWIN STEREO SPEAKERS

The Seeburg Twin Stereo Speakers are specifically designed to be used in pairs. Each Speaker carries its own channel identification i.e.; Channel 1 and Channel 2 respectively. The following types are available:

A. Package of One Each Type TW1-8C1 and Type TW1-8C2, Twin Stereo Speakers for Wall Type installation (Part No. 502890).

B. Package of One Each Type TC1-8C1 and Type TC1-8C2, Twin Stereo Speakers for Corner installation (Part No. 502891).

C. Package of One Each Type TR1-8C1 and Type TR1-8C2, Twin Stereo Speakers for Recessed Type installations (Ceiling or Wall, Part No. 502892).

D. Package of One Each Type EBTC1-12C1 and Type EBTC1-12C2, Twin Stereo Speakers for corner installations requiring the optimum bass response (Part No. 502897).

NOTE 1: Series TW1 Wall Speakers may be readily converted for corner installations by the addition of Corner Adapters available as a package of two each, Type "CA1", Part No. 502881.

NOTE 2: Series TW1 Wall Speakers may be grouped in units of four identical speakers for ceiling suspension by the use of a Type 4P A-1 Four-Way Pendent Assembly, Part No. 502985.

NOTE 3: Series TW1 Wall Speakers may be grouped in units of 2 identical speakers for ceiling suspension by the use of a Type 2P A-1 Two-Way Pendent Assembly, Part No. 512020.

STEREO SPEAKER CONTROL

Type S10LT-3 (Accessory)

The Stereo Speaker Control, Type S10LT-3, is for volume level adjustment of Stereo Speakers connected to constant voltage speaker lines. One or more pairs of Stereo Speakers may be controlled in seven 3 db steps (or turned off) without affecting other speakers connected to the same Stereo Amplifier.

REMOTE VOLUME CONTROL

Type RSVC-1 (Accessory)

The Remote Volume Control, Type RSVC-1 is an accessory which may be used with the Seeburg Stereophonic Select-O-Matic Phonograph to remotely control the volume of both channels and to cancel selections. This volumn control can be used on both Stereo and Monaural Systems.

Type MRVC-3 (Accessory)

The Remote Monaural Volume Control Type MRVC-3 is an accessory which may be used with the Seeburg Monaural Select-O-Matic Phonograph to remotely control the volume of the single channel and to cancel selections. This Volume Control is to be used on Monaural Systems only.

TYPICAL INSTALLATION OF MONAURAL SYSTEM

MONAURAL SPEAKER REQUIREMENTS

Except in small locations, adequate distribution of sound at uniform level thru-out the service area can be obtained only by careful placement of a sufficient number of High Fidelity remote speakers.

CONNECTION OF HIGH FIDELITY REMOTE SPEAKERS

Constant Voltage Type High Fidelity Speaker Terminals are marked A and B and are connected to matching terminals A and B on the amplifier. The volume level (watts) may be set at each speaker to suit local requirements. A load of 25 watts can be carried by No. 24 wire (Part No. 502090) for CV line lengths up to 450 feet.

CAUTION: DO NOT CONNECT LOW IMPEDANCE (8 OR 16 OHM) SPEAKERS TO THIS PHONOGRAPH.

SELECT-O-MATIC SPEAKER SWITCH

Set the Select-O-Matic Speaker Switch on the front of the amplifier to the position which gives the best balance between the Select-O-Matic Speakers and the remote speakers with a normal volume control setting. IF NO REMOTE SPEAKERS ARE USED, THE SWITCH MUST BE SET TO 16 WATTS.

The wattage requirements of all speakers combined must not exceed 20 watts. At no time should the total amplifier load be less than five watts or 25% of the rated amplifier load.

NOTE: IF THE WATTAGE OF ALL SPEAKERS (INCLUDING THE SELECT-O-MATIC SPEAKERS) TO BE CONNECTED TO THE HIGH FIDELITY AUDIO SYSTEM, EXCEEDS 20 WATTS, A SEEBURG POWER AMPLIFIER MAY BE USED TO SUPPLY PART OF THE LOAD. FOLLOW THE INSTRUCTIONS SUPPLIED WITH THE AMPLIFIER FOR CONNECTING SPEAKERS.

POWER DRAWN BY ALL SPEAKERS

Phonograph Speakers	4 Watts
1 - 12 Inch C V Speakers (A)	4 Watts
2 - 8 Inch C V Speakers (B, C) at 4 Watts each	8 Watts
TOTAL WATTAGE	**16 Watts**

This is a satisfactory amplifier loading.

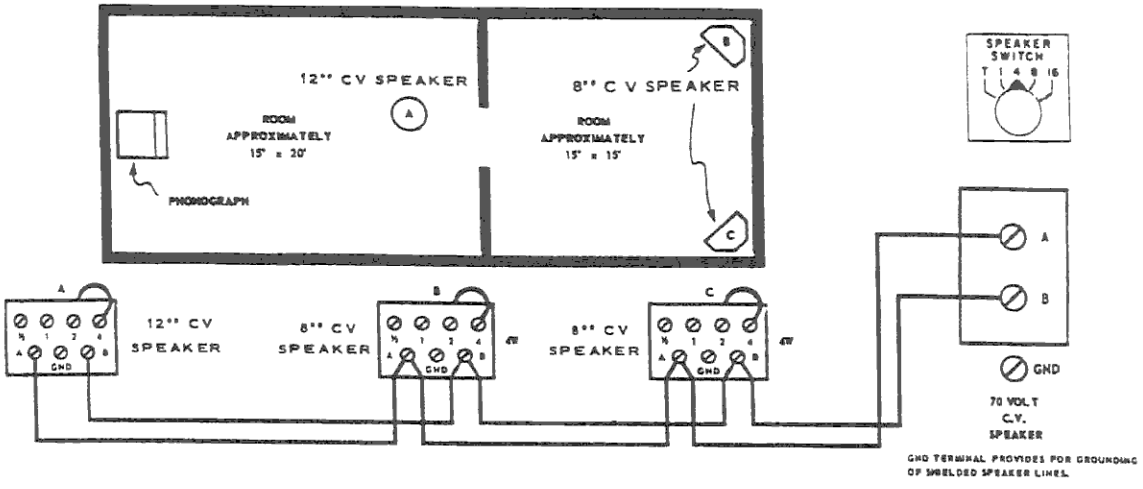


Figure 13.

THE SEEBURG STEREOPHONIC SYSTEM

BASIC RULES FOR INSTALLATION

THE FOLLOWING BASIC RULES FOR THE INSTALLATION OF THE SEEBURG STEREOPHONIC SYSTEM ARE GUIDEPOSTS TOWARD THE SUCCESSFUL ACHIEVEMENT OF STEREOPHONIC REPRODUCTION.

1. **ALL LOCATIONS.** There is not a location in the country, regardless of size, which cannot successfully and to good advantage use a Stereo System.

2. **TWIN STEREO SPEAKERS - A MUST.** At least one pair of remote twin Stereo Speakers, properly placed, is essential to the reproduction of stereo. Use additional pairs as required to obtain good distribution throughout the listening area.

3. **SPEAKERS IN PAIRS - OPPOSITE.** Remote Twin Stereo Speakers should be installed in pairs (approximately opposite one another) and the speakers of each pair should face into the same area.

4. **HEIGHT FROM FLOOR.** The proper distance from the floor to the grille centers of wall and corner speakers should be as follows:

ROOM WIDTH (Distance between channels)	HEIGHT ABOVE FLOOR
8 feet	7 feet to 7½ feet
12 feet	7½ feet to 8 feet
18 feet	8 feet to 8½ feet
25 feet to 30 feet	8½ feet to 9½ feet

5. **PHASING.** The connections must be such that the phasing of all remote twin stereo speakers and phonograph speakers will be alike.

6. **SPACING WITHIN A CHANNEL.** The spacing between channel 1 remote speakers shall be about 15 to 20 feet; likewise, the spacing between channel 2 remote speakers shall be about 15 to 20 feet - depending upon room dimensions.

7. **SPACING BETWEEN CHANNELS.** The distance between remote speaker channels should be not less than 8 feet, and not more than 30 feet.

8. **TEN PAIRS IS MAXIMUM.** At no time shall more than ten remote speakers be connected to either channel of an amplifier. If additional speakers are required, use a type HFA1-L6 or a type HFA3 amplifier in each channel.

9. **BALANCE CHANNELS WATTS.** The sum of the wattage settings of all remote speakers must be the same for each channel.

10. **MORE BASS AT FAR POINTS.** When a pair of remote twin stereo speakers is installed more than 40 feet from a stereo phonograph, or in a separate room, a wire jumper should be placed from "VC1" to "GND" of each of these speakers. In these areas where the listener cannot hear the bass from the stereo phonograph it is important that corner type twin stereo speakers, TC1-8C1 and TC1-8C2 or EBTC1-12C1 and EBTC1-12C2 be used.

11. **SPEAKERS JUMPERED - 8 WATTS MAX.** Remote speakers with wire jumpers from "VC1" to "GND" must never be connected for more than 8 watts each. Exception is the EBTC1-12 series which may be connected for 16 watts each.

12. **20 WATTS MAXIMUM.** Add total watts of all remote speakers in a channel with jumpers between "VC1" and "GND" to the wattage setting of the phono speaker switch. This total must not exceed 20 watts.

13. **PHONO SPEAKER SWITCH SETTING.** Add total watts of all remote speakers in a channel without jumpers between "VC1" and "GND". This must approximately equal the wattage setting of the phono speaker switch.

14. **NETWORK SETTING.** Make sure that stereo network switch is set in "yes" position when using twin stereo speakers.

15. **BALANCING.** A stereo installation is never complete without a final test of balance between the two channels, using an output meter and a monaural record. Never attempt to balance system with a conventional stereo record.

Now to expand on our catechism - - - -

1. **ALL LOCATIONS.** There is not a location in the country, regardless of size, which cannot successfully and to good advantage use a Stereo System.

The examples subsequently illustrated are typical installations of stereo systems. Example 1 shows how to set up a stereo system for a small location (no dimension over 20 feet). In such cases, the Seeburg stereo phonograph and one pair of Seeburg Twin Stereo Speakers (Wall, Corner or Recessed Wall Types as required and detailed on Page 5, are an ideal combination. For large locations and separate rooms, additional pairs of remote speakers are required as indicated in other examples. The flexibility of the system is further demonstrated as applied to installations in rooms separate from the phonograph or when the RC Special (Hideaway), is

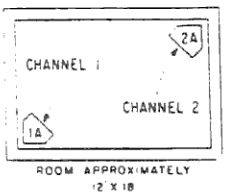


Figure 14.

used, *Figure 14*. Here a pair of remote speakers are installed diagonally opposite to each other, resulting in highly satisfactory stereo reproduction.

2. **TWIN STEREO SPEAKERS - A MUST.** At least one pair of remote twin stereo speakers properly placed, is essential to the reproduction of stereo. Use additional pairs as required to obtain good distribution throughout the listening area.

Only small locations (no dimension over 20 feet) are properly covered by a single pair of stereo speakers. If the listener is audibly aware of the sound from at least one speaker in each channel, the basic requirements of stereo have been satisfied in providing the essential ingredients for stereo reproduction.

3. **SPEAKERS IN PAIRS - OPPOSITE.** Remote Twin Stereo Speakers should be installed in pairs (approximately opposite one another) and the speakers of each pair should face into the same area.

The reason for pairs of remote speakers is quite obvious, since the very name "stereophonic" implies giving the effect of coming from two or more directions, of sound reproduced." Facing each speaker of a pair of remote speakers into the same area is fundamental to obtaining the best possible distribution of the stereo effect throughout the listening area.

4. **HEIGHT FROM FLOOR.** The proper distance from the floor to the grille centers of wall and corner speakers should be as follows:

ROOM WIDTH (Distance between channels)	HEIGHT ABOVE FLOOR
8 feet	7 feet to 7½ feet
12 feet	7½ feet to 8 feet
18 feet	8 feet to 8½ feet
25 feet to 30 feet	8½ feet to 9½ feet

As indicated in the above tabulation, installation height of stereo speakers is a function of the room width (distance between channels). Adhering closely to speaker heights as shown in the table above will result in good distribution of the stereo effect throughout the listening area.

5. **PHASING.** The connections must be such that the phasing of all remote twin stereo speakers and phonograph speakers will be alike.

It is imperative that phasing of all speakers in the stereo system be alike. Incorrectly connected "CV" lines will result in out-of-phase speaker performance causing cancellation of audio output. The seven examples of typical stereo installations clearly indicate the fact that all A terminals must be wired together and all B terminals must be wired together. Run a single "Channel 1" speaker line down the left side wall and connect all "Channel 1" speakers across this line, being sure to connect all "A" terminals to the same wire - this wire is connected to the "A" terminal of the amplifier Channel 1 output terminals. The other wire will similarily connect to all "B" terminals of Channel 1. Repeat this procedure along the right wall for all Channel 2 speakers and connect the Channel 2 line to Channel 2 amplifier output. IT IS ESSENTIAL THAT NONE OF THESE CONNECTIONS ARE REVERSED. CHECK POLARITY OF CONNECTIONS AT ALL TERMINALS.

6. **SPACING WITHIN A CHANNEL.** The spacing between channel 1 remote speakers shall be about 15 to 20 feet; likewise, the spacing between channel 2 remote speakers shall be about 15 to 20 feet - depending upon room dimensions.

Stereo speaker spacing, although not too critical, is of importance in providing proper distribution of sound. If any two speakers of one channel are too far apart, the required overlap of audio output for smooth sound distribution is not obtained.

7. **SPACING BETWEEN CHANNELS.** The distance between remote speaker channels should be not less than 8 feet, and not more than 30 feet.

If the distance between remote speaker channels is too small in a large room, the stereo effect is reduced. Proximity of both channels to less than 8 feet tends to integrate the sounds at the point of projection, thus nullifying the effect.

Distances greater than 30 feet between channels result in accentuating the directional effect to the point where the "hole in the middle" nullifies the desired solidity of the stereo effect.

The use of Four-Way or Two-Way Pendent assemblies provide an excellent means of stereo sound distribution in very wide rooms.

A typical example of an existing 6 ceiling speaker installation in which the initial speaker array and proximity would be incorrect for stereo is shown in *Figure 15.*

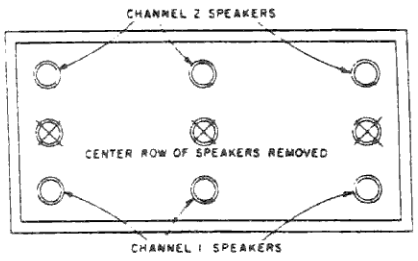


Figure 15.

In order to modify this arrangement for stereo sound reproduction, it is necessary to remove the center row of speakers as shown and connect the outside rows to Channel 1 and Channel 2 amplifier outputs, respectively, thus resulting in two separate channels of sound properly spaced. It should be understood, however, that stereo reproduction from ceiling speakers, no matter how well arranged, cannot equal the performance of wall and corner types.

8. **TEN PAIRS IS MAXIMUM.** At no time shall more than ten remote speakers be connected to either channel of an amplifier. If additional speakers are required, use a type HFA1-L6 or a type HFA3 amplifier in each channel.

Care must be exercised never to overload the phonograph amplifier. This would result in impedance mismatch and distortion. Auxiliary Seeburg High-Fidelity amplifiers, one on each channel, may be added as required.

9. **BALANCE CHANNELS WATTS.** The sum of the wattage settings of all remote speakers must be the same for each channel.

Stereophonic reproduction demands power balance of all speakers on each channel. A typical case is example 2, Page 12, of our sample speaker installations:

CHANNEL 1 LOADING

1A (No "VC1" to "GND" Jumper) set at 8 Watts
1B (No "VC1" to "GND" Jumper) set at 8 Watts
Total 16 Watts
Equals Phonograph Speaker Switch Setting of 16 Watts.

1C (With "VC1" to "GND" Jumper) set at 4 Watts
Phonograph Speaker Switch Setting of 16 Watts
Total 20 Watts
Which is satisfactory amplifier loading.

CHANNEL 2 LOADING

Same as Channel 1 loading

10. **MORE BASS AT FAR POINTS.** When a pair of remote twin stereo speakers is installed more than 40 feet from a stereo phonograph, or in a separate room, a wire jumper should be placed from "VC1" to "GND" of each of these speakers. In these areas where the listener cannot hear the bass from the stereo phonograph it is important that corner type twin stereo speakers, TC1-8C1 and TC1-8C2 or EBTC1-12C1 and EBTC1-12C2 be used.

The addition of a wire jumper from "VC1" to "GND" on a remote speaker restores its full frequency range. Improved baffling resulting from corner installations provides superior bass response. Any wall type twin stereo speaker, TW1-8C1 and TW1-8C2, may easily be converted for corner application by using speaker corner adaptors, Type CA1, available through the service dept. as a package of two(Part No.502881).

The use of EBTC1-12 series speaker provides the optimum in bass response.

11. **SPEAKERS JUMPERED - 8 WATTS MAX.** Remote speakers with wire jumpers from "VC1" to "GND" must never be connected for more than 8 watts each. Exception is the EBTC1-12 series which may be connected for 16 watts each.

To avoid overloading and damaging of remote speakers, with wire jumpers from "VC1" to "GND" they must never be connected for more than 8 watts each. The larger (12 inch) speaker in the EBTC1-12 series can carry 16 watts.

12. **20 WATTS MAXIMUM.** Add total watts of all remote speakers in a channel with jumpers between "VC1" and "GND" to the wattage setting of the phono speaker switch. This total must not exceed 20 watts.

The total Wattage of all speakers with jumpers between "VC1" to "GND" must not exceed 20 to avoid overloading the amplifier with consequent unbalance, mismatch and distortion.

13. **PHONO SPEAKER SWITCH SETTING.** Add total watts of all remote speakers in a channel without jumpers between "VC1" and "GND". This must approximately equal the wattage setting of the phono speaker switch.

Occasionally this setting may result in too much bass near the phonograph and too little bass at the far end of the room (near the twin stereo speakers with jumpers across "VC1" and "GND"). Under these circumstances, reduce the setting of the phonograph speaker switch by one position and increase the bass setting of the tone control.

CAUTION: Excessive bass will mask the stereo effect. See label inside the phonograph for optimum tone control settings.

14. **NETWORK SETTING.** Make sure that stereo network switch is set in "YES" position when using twin stereo speakers.

A stereo network in the phonograph assures the correct distribution of all audio frequencies to Channel 1 and Channel 2 speakers in the phonograph, as well as to Channel 1 and Channel 2 remote speakers, when set in "YES" position.

15. **BALANCING.** A stereo installation is never complete without a final test of balance between the two channels by the use of a output meter and a monaural record..Never attempt to balance system with a conventional stereo record.

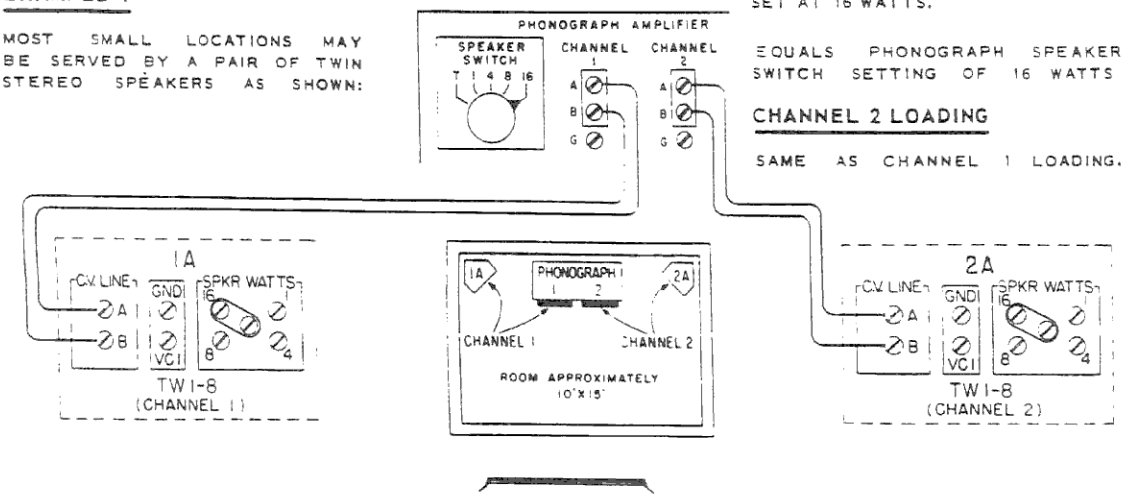
Clip the output meter to the CHANNEL 1 and CHANNEL 2 phonograph speaker voice coil terminals successively and adjust the amplifier balance control while playing a monaural record of reasonably uniform sound level.

After an installation has been made, check the listening areas while playing stereo and monaural records to make sure that all areas are properly served.

TYPICAL INSTALLATIONS OF THE SEEBURG STEREO SYSTEM

EXAMPLE 1

MOST SMALL LOCATIONS MAY BE SERVED BY A PAIR OF TWIN STEREO SPEAKERS AS SHOWN:



CHANNEL 1 LOADING

1A (NO "VC1" TO "GND" JUMPER) SET AT 16 WATTS.

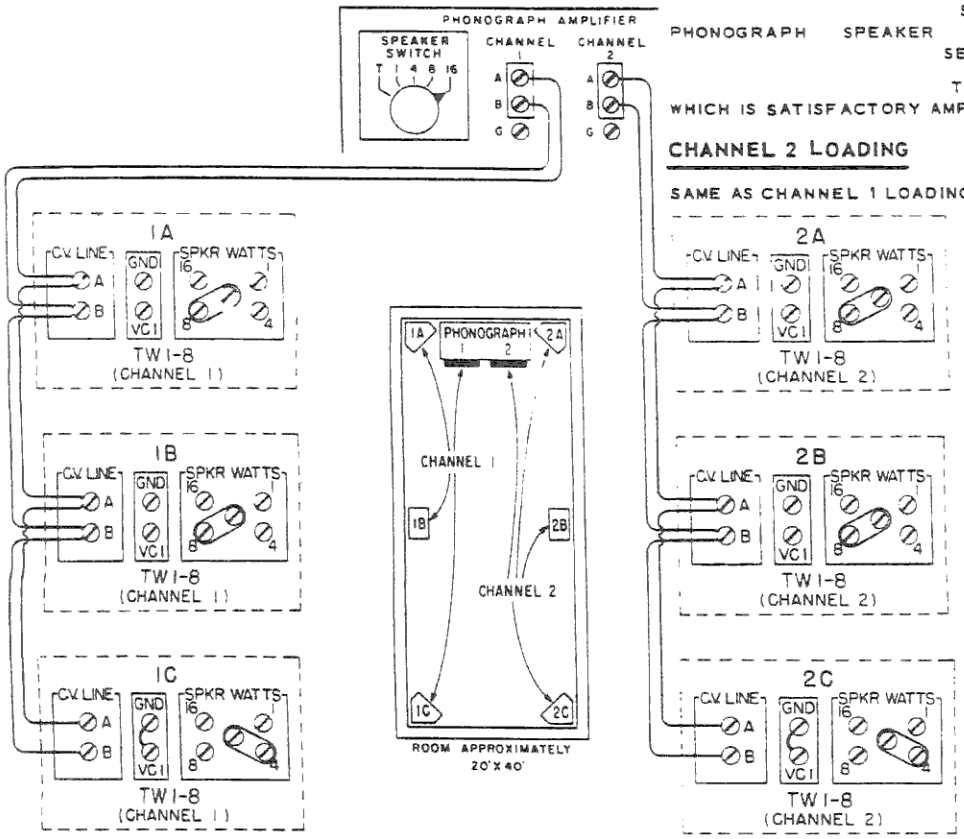
EQUALS PHONOGRAPH SPEAKER SWITCH SETTING OF 16 WATTS

CHANNEL 2 LOADING

SAME AS CHANNEL 1 LOADING.

EXAMPLE 2

LARGE LOCATION WITH REMOTE SPEAKER 40 FEET FROM THE PHONOGRAPH:



CHANNEL 1 LOADING

1A (NO "VC1" TO "GND" JUMPER) SET AT 8 WATTS
1B (NO "VC1" TO "GND" JUMPER) SET AT 8 WATTS

TOTAL 16 WATTS

EQUALS PHONOGRAPH SPEAKER SWITCH SETTING OF 16 WATTS.

1C (WITH "VC1" TO "GND" JUMPER) SET AT 4 WATTS

PHONOGRAPH SPEAKER SWITCH SETTING 16 WATTS

TOTAL 20 WATTS

WHICH IS SATISFACTORY AMPLIFIER LOADING

CHANNEL 2 LOADING

SAME AS CHANNEL 1 LOADING.

EXAMPLE 3

LARGE LOCATION WITH REMOTE SPEAKERS OVER 40 FEET AWAY FROM PHONOGRAPH AND AROUND THE CORNER FROM IT:

**Speakers 1E and 2E may be Seeburg Type, EBTC1-12 for optimum base reproduction in the area remote from the phonograph.*

CHANNEL 1 LOADING

1A (NO "VC1" TO "GND" JUMPER)
SET AT 4 WATTS
1B (NO "VC1" TO "GND" JUMPER
SET AT 4 WATTS
1C (NO "VC1" TO "GND" JUMPER)
SET AT 4 WATTS

TOTAL 12 WATTS

PHONOGRAPH SPEAKER SWITCH SET AT AT 8 WATTS (CLOSEST AVAILABLE SETTING)

1D (WITH "VC1" TO "GND" JUMPER)
SET AT 4 WATTS
1E (WITH "VC1" TO 'GND" JUMPER)
SET AT 4 WATTS

TOTAL 8 WATTS

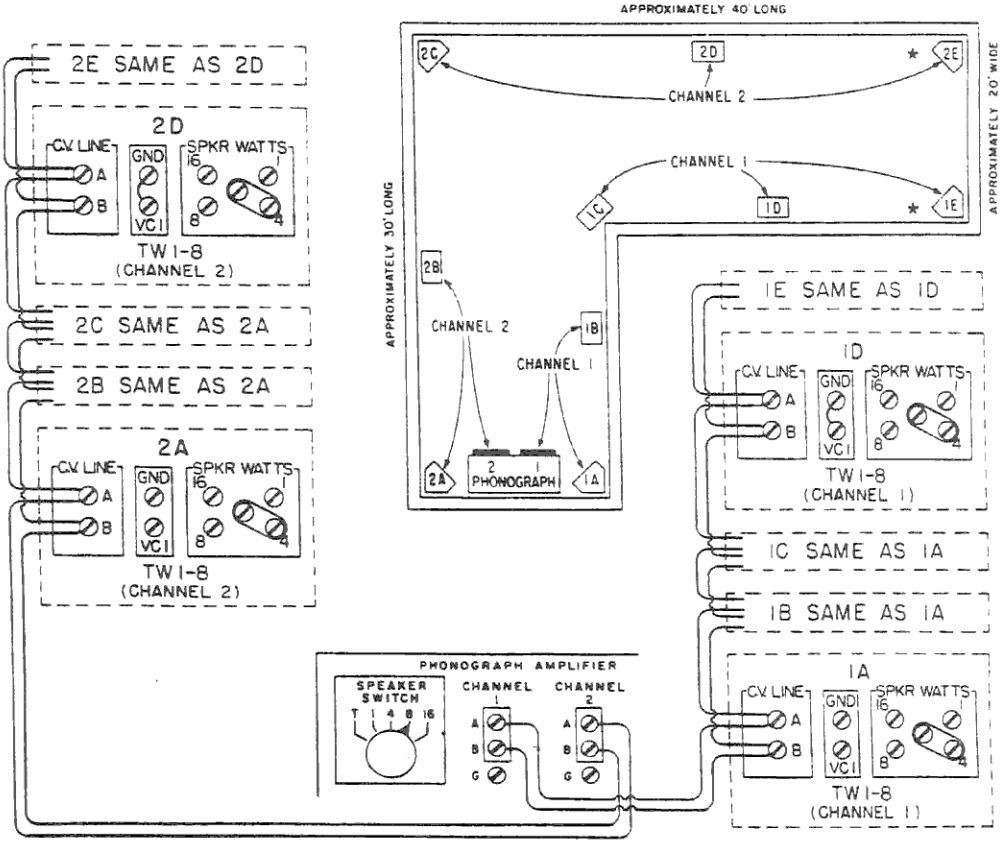
PHONOGRAPH SPEAKER SWITCH SET 8 WATTS

TOTAL 16 WATTS

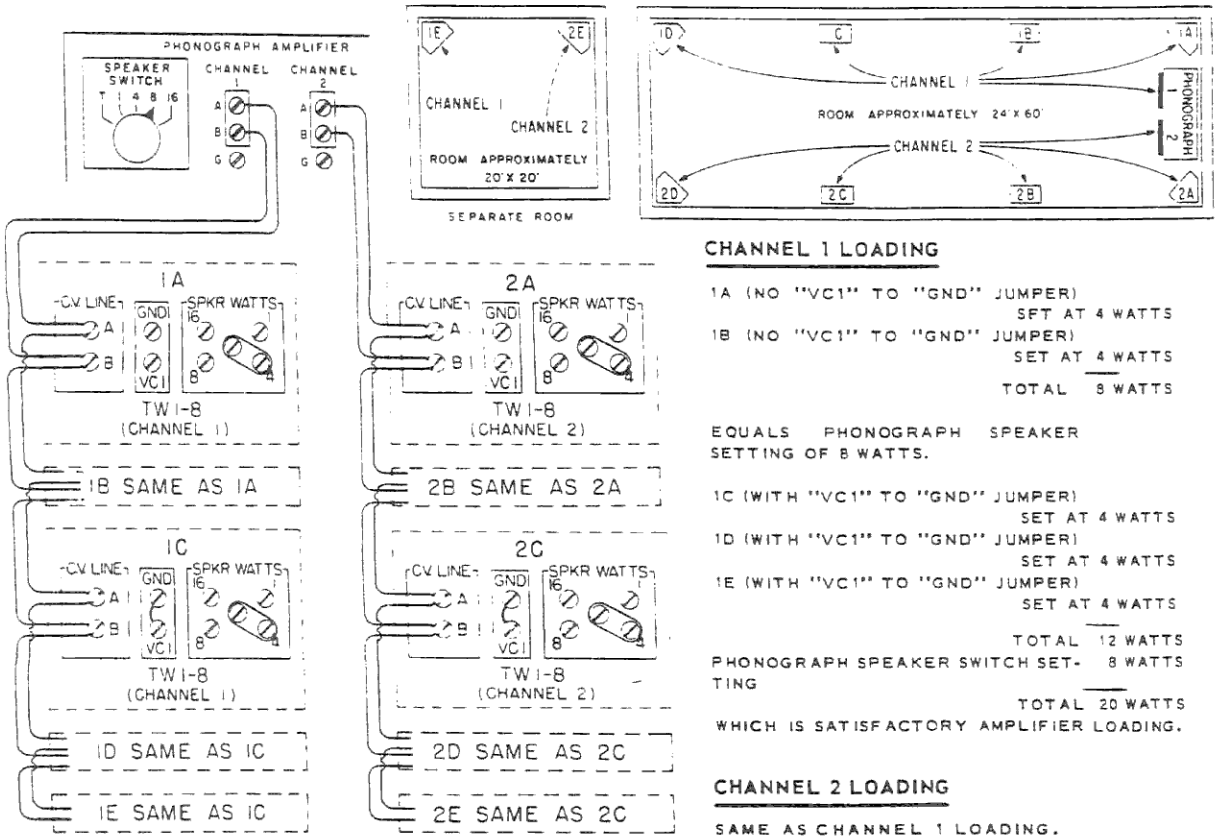
WHICH IS SATISFACTORY AMPLIFIER LOADING

CHANNEL 2 LOADING

SAME AS CHANNEL 1 LOADING.



EXAMPLE 4 A MULTIPLE AREA INSTALLATION SHOWING REMOTE STEREO SPEAKERS INSTALLED IN BOTH THE ROOM CONTAINING THE PHONOGRAPH AND A SEPARATE ROOM:



CHANNEL 1 LOADING

1A (NO "VC1" TO "GND" JUMPER) SET AT 4 WATTS
1B (NO "VC1" TO "GND" JUMPER) SET AT 4 WATTS
TOTAL 8 WATTS

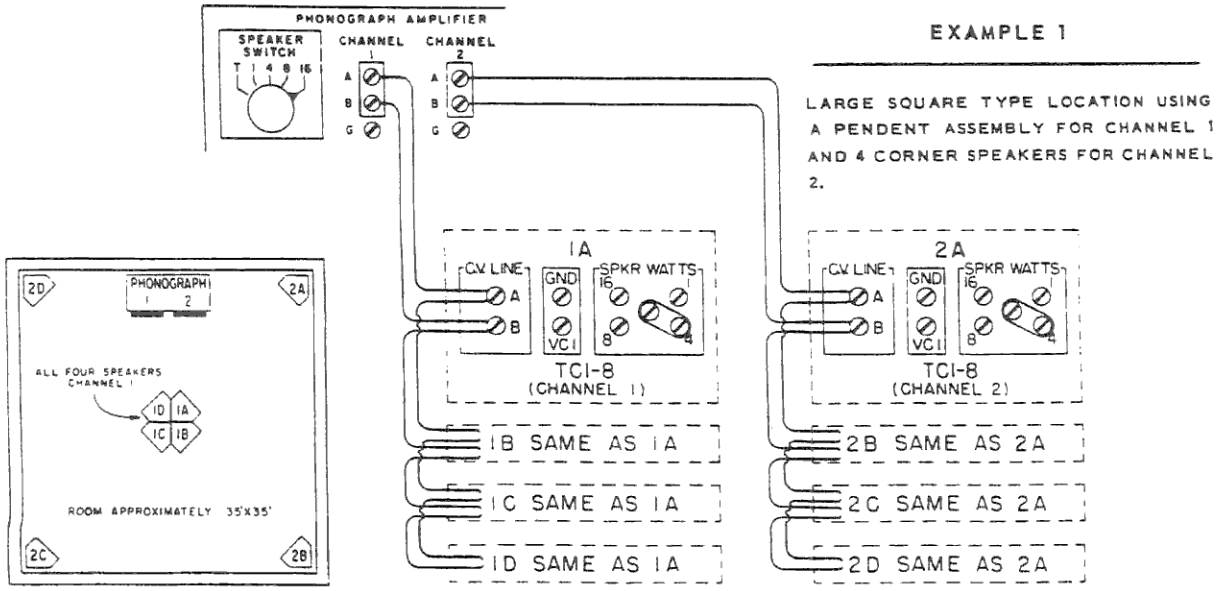
EQUALS PHONOGRAPH SPEAKER SETTING OF 8 WATTS.

1C (WITH "VC1" TO "GND" JUMPER) SET AT 4 WATTS
1D (WITH "VC1" TO "GND" JUMPER) SET AT 4 WATTS
1E (WITH "VC1" TO "GND" JUMPER) SET AT 4 WATTS
TOTAL 12 WATTS
PHONOGRAPH SPEAKER SWITCH SETTING 8 WATTS
TOTAL 20 WATTS
WHICH IS SATISFACTORY AMPLIFIER LOADING.

CHANNEL 2 LOADING

SAME AS CHANNEL 1 LOADING.

TYPICAL SEEBURG STEREO INSTALLATIONS USING THE FOUR-WAY PENDENT ASSEMBLY



EXAMPLE 1

LARGE SQUARE TYPE LOCATION USING A PENDENT ASSEMBLY FOR CHANNEL 1 AND 4 CORNER SPEAKERS FOR CHANNEL 2.

CHANNEL 1 LOADING

1 A (NO "VC1" TO "GND" JUMPER) SET AT 4 WATTS
1 B (NO "VC1" TO "GND" JUMPER) SET AT 4 WATTS
1 C (NO "VC1" TO "GND" JUMPER) SET AT 4 WATTS
1 D (NO "VC1" TO "GND" JUMPER) SET AT 4 WATTS
TOTAL 16 WATTS
EQUALS PHONO SPEAKER SWITCH SETTING OF 16 WATTS

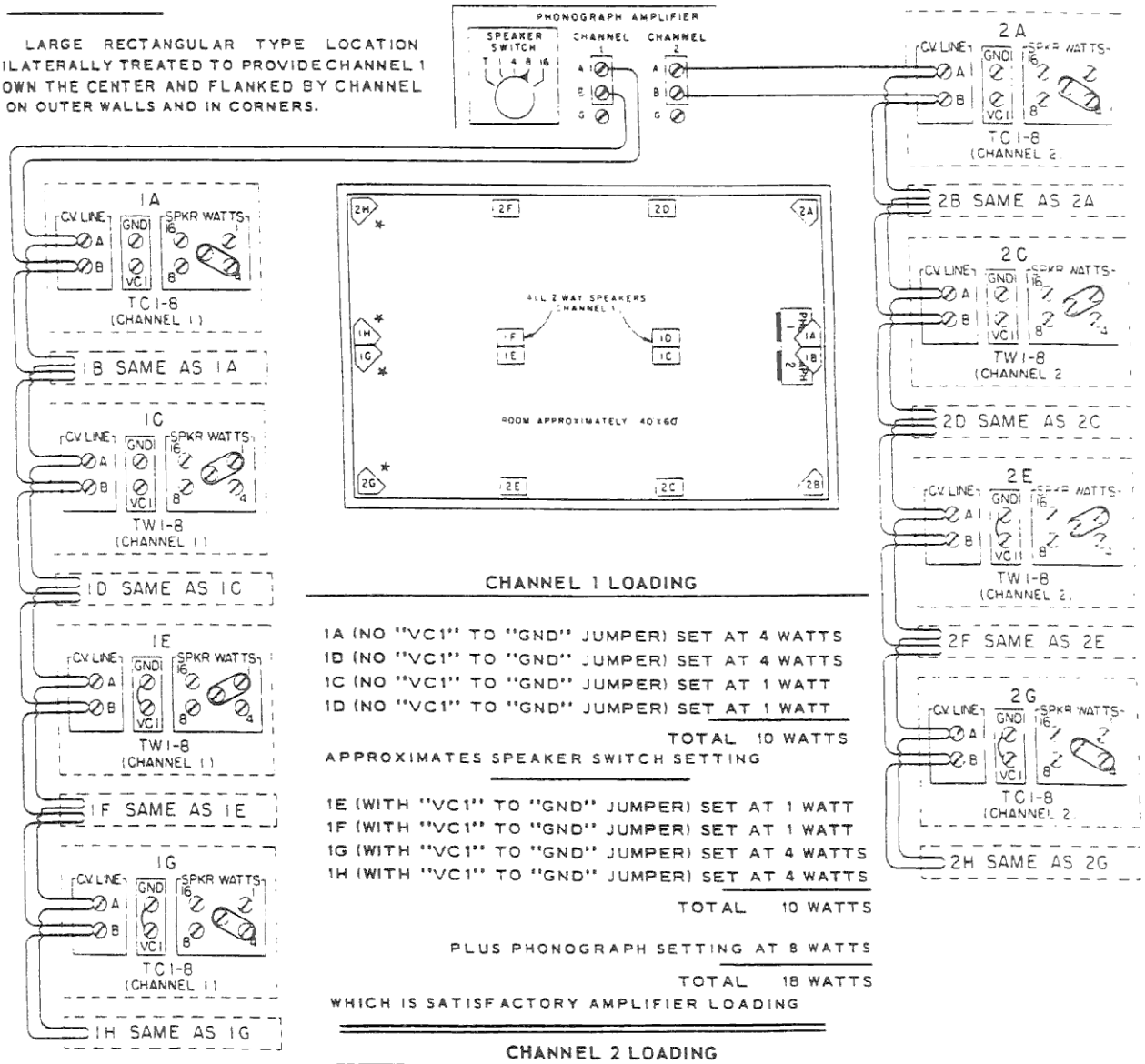
CHANNEL 2 LOADING

2 A (NO "VC1" TO "GND" JUMPER) SET AT 4 WATTS
2 B (NO "VC1" TO "GND" JUMPER) SET AT 4 WATTS
2 C (NO "VC1" TO "GND" JUMPER) SET AT 4 WATTS
2 D (NO "VC1" TO "GND" JUMPER) SET AT 4 WATTS
TOTAL 16 WATTS
EQUALS PHONO SPEAKER SWITCH SETTING OF 16 WATTS

TYPICAL SEEBURG STEREO INSTALLATION USING THE TWO-WAY PENDANT ASSEMBLY

EXAMPLE 1

A LARGE RECTANGULAR TYPE LOCATION BILATERALLY TREATED TO PROVIDE CHANNEL 1 DOWN THE CENTER AND FLANKED BY CHANNEL 2 ON OUTER WALLS AND IN CORNERS.



CHANNEL 1 LOADING

1A (NO "VC1" TO "GND" JUMPER) SET AT 4 WATTS
1B (NO "VC1" TO "GND" JUMPER) SET AT 4 WATTS
1C (NO "VC1" TO "GND" JUMPER) SET AT 1 WATT
1D (NO "VC1" TO "GND" JUMPER) SET AT 1 WATT

TOTAL 10 WATTS

APPROXIMATES SPEAKER SWITCH SETTING

1E (WITH "VC1" TO "GND" JUMPER) SET AT 1 WATT
1F (WITH "VC1" TO "GND" JUMPER) SET AT 1 WATT
1G (WITH "VC1" TO "GND" JUMPER) SET AT 4 WATTS
1H (WITH "VC1" TO "GND" JUMPER) SET AT 4 WATTS

TOTAL 10 WATTS

PLUS PHONOGRAPH SETTING AT 8 WATTS

TOTAL 18 WATTS

WHICH IS SATISFACTORY AMPLIFIER LOADING

CHANNEL 2 LOADING

2A (NO "VC1" TO "GND" JUMPER) SET AT 4 WATTS
2B (NO "VC1" TO "GND" JUMPER) SET AT 4 WATTS
2C (NO "VC1" TO "GND" JUMPER) SET AT 1 WATT
2D (NO "VC1" TO "GND" JUMPER) SET AT 1 WATT

TOTAL 10 WATTS

WHICH IS SATISFACTORY AMPLIFIER LOADING

2E (WITH "VC1" TO "GND" JUMPER) SET AT 1 WATT
2F (WITH "VC1" TO "GND" JUMPER) SET AT 1 WATT
2G (WITH "VC1" TO "GND" JUMPER) SET AT 4 WATTS
2H (WITH "VC1" TO "GND" JUMPER) SET AT 4 WATTS

TOTAL 10 WATTS

PLUS PHONOGRAPH SET AT 8 WATTS

TOTAL 18 WATTS

WHICH IS SATISFACTORY AMPLIFIER LOADING

**Speakers 2G, 2H, 1H and 1G may be Seeburg Type, EBTC1-12 for optimum base reproduction in the area remote from the phonograph.*

NOTE: If higher speaker wattages are required in high noise level locations, use additional amplifiers.

Record Care

To avoid accumulation of dust and dirt, keep oil off the records. Wipe your hands with a clean cloth before handling records, and always handle records by edge and center hole. Records that show signs of surface dust or dirt should be wiped with a slightly dampened cloth, using a circular motion. Use only water to dampen the cloth - solvents will damage the records. Records not in use should be stored on edge in a cool place. Avoid exposing the records to excessive heat. Records become overheated in a very short time if exposed to direct sunlight or if stored in a closed automobile or truck. Temperature above 120 degrees F. should be avoided. See instructions on "PLACING THE SELECT-O-Matic".

Stylus Replacement

In the presence of friction, wear of the Stylus starts with the first play and continues until the Stylus is replaced. The tone quality is good and distortion remains at a low figure for the first few thousand plays but gradually distortion increases until a disagreeable amount is noticed.

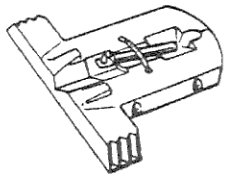


Figure 16. Armature Assembly

When only good vinylite 45 rpm records are used, armature assemblies with Sapphire Styluses should be changed every four or five thousand plays to maintain good reproduction. If, because of the presence of oil on the records, dust or dirt is permitted to accumulate and remain on the surface, the wear will be more rapid; economical operation will require more frequent armature assembly replacement.

CAUTION: IF THE ARMATURE ASSEMBLIES ARE NOT REPLACED BEFORE OBJECTIONABLE DISTORTION SETS IN, THE RECORDS MAY BE PERMANENTLY DAMAGED, AND REPLACING THE STYLUSES WILL NOT RESTORE THE ORIGINAL TONE QUALITY.

To Replace Armature Assemblies

1. Make a selection to the right of magazine center and left side of a record to position carriage and pickup arm cradle for easiest access to styluses.

2. Remove worn Styluses by gripping the top portion of the "T" using the thumb and forefinger. Light pressure in the direction away from the Stylus Point will slide the Armature out of the cartridge slot.

Figure 17. Removing Armature Assembly.

3. Install new Armature Assembly by laying it flat in open end of cartridge slot, and sliding forward in slot until it bottoms.

In order to retain good quality reproduction, it is necessary to keep the pickup and Styluses clean and in good condition.

CAUTION: THE PICKUP AND STYLUSES MUST BE HANDLED CAREFULLY OR THE DELICATE ARMATURE SUSPENSION MAY BE DAMAGED.

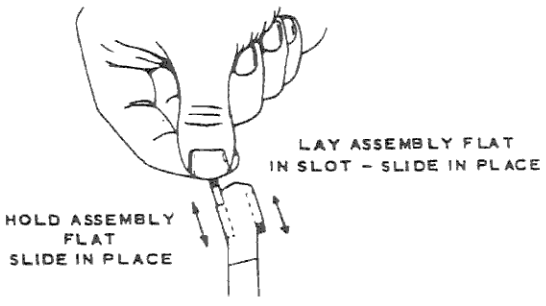


Figure 18. Installing New Armature.

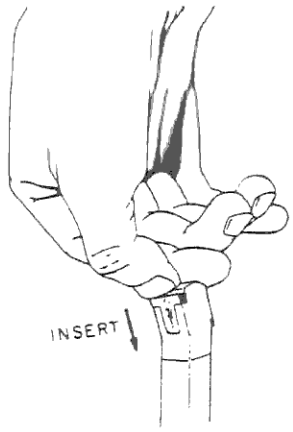


Figure 19. Installing New Armature.

When records are changed, or the equipment is cleaned the Stylus Well and the Stylus Brushes should be cleaned by using the small brush furnished for this purpose and mounted on the inside left wall of the cabinet.

LUBRICATION

Follow the complete lubrication instructions given on the lubrication chart in the envelope on the inside wall of the phonograph.

The recommended lubricants are Seeburg Select-O-Matic Oil, Part No. 53014, and Aero Lubriplate, Part No. 53006.

LIGHT REPLACEMENT

Upper Cabinet Light

The upper Cabinet Light illuminates the upper Program Holders and Pictorial Window. It is a 25-watt, 28-inch cool White Fluorescent tube which is accessible for replacement when the cabinet lid is latched in the raised position.

Lower Cabinet Light

This is a 25-watt, 28-inch cool White Fluorescent Light with associated starter. It illuminates the lower Program Holders and front of the Cabinet and is accessible when the lid is open.

Credit Lamps

One Credit Lamp Socket Assembly using a No. 55 bulb is cabled on the left hand side of the Tormat Electrical Selector.

PREPARING INSTRUMENT FOR MOVING

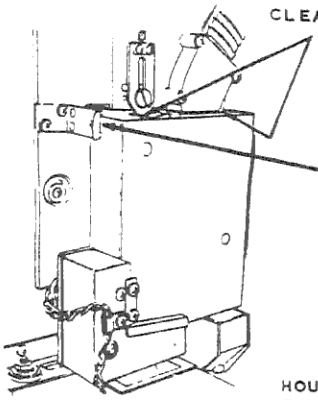
1. Put the shims under the base, at the mechanism hold-down bolts.
2. Tighten four mechanism hold-down nuts.
3. Remove all records from magazine.
4. With the pickup arm in left hand side playing position, scan mechanism to a point at selection A-1.
5. Place protective tube over pickup cartridge and install pickup arm shipping support.
6. Put two fibre pads (a long pad in the rear and a short pad in the front) under the carriage wheels and bolt the carriage to the base by means of two 4½ inch long thumb screws, which are to be inserted thru mechanism base.

TO SHIP

If the instrument is to be shipped by way of a transportation company, it should be blocked and crated in the same manner in which it was received from the factory.

SLUG REJECTOR

5¢, 10¢, 25¢

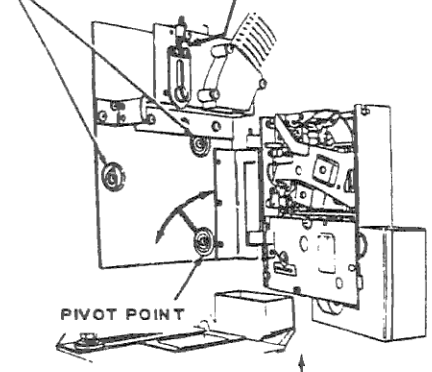


CLEARANCE APPROX. .016

TO OPEN: RELEASE THIS CATCH AND SWING OUT

HOUSING AND WIRE TO BE POSITIONED SO THAT A FULL STROKE OF SCAVENGER IS OBTAINED, WHEN SCAVENGER BUTTON IS DEPRESSED FLUSH.

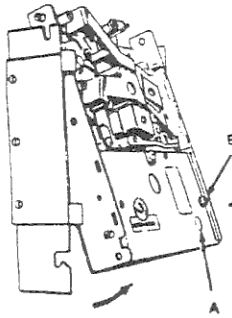
TO LEVEL: LOOSEN THESE (2) SCREWS AND SWING FRAME TOWARD FRONT OR REAR.



PIVOT POINT

SLUG REJECTOR AND FRAME ASSEMBLY MAY BE LIFTED UP AND OFF FOR EXAMINATION OR SERVICE.

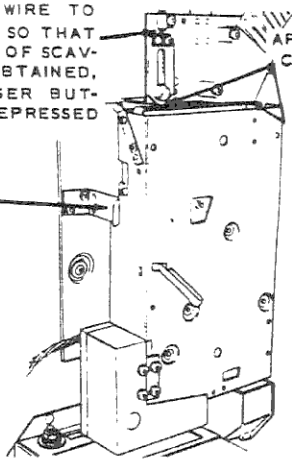
TO REMOVE SLUG REJECTOR FROM ITS FRAME LIFT UP AND SWING OUT.



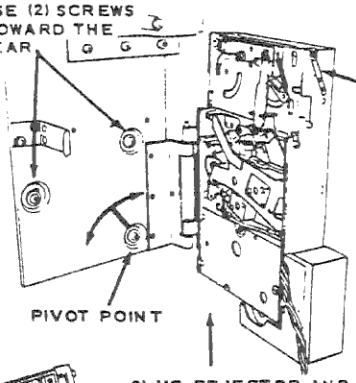
5¢, 10¢, 25¢, 50¢

HOUSING AND WIRE TO BE POSITIONED SO THAT A FULL STROKE OF SCAVENGER IS OBTAINED, WHEN SCAVENGER BUTTON IS DEPRESSED FLUSH.

APPROX. .016 CLEARANCE

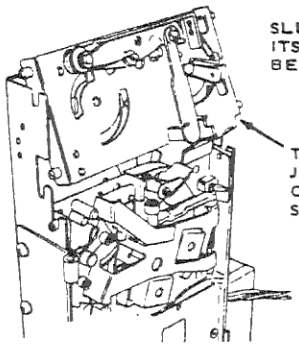


TO LEVEL SLUG REJECTOR: LOOSEN THESE (2) SCREWS AND SWING TOWARD THE FRONT OR REAR



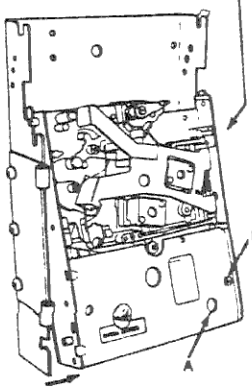
PIVOT POINT

SLUG REJECTOR AND ITS FRAME MAY NOW BE LIFTED UP AND OFF.



TO REMOVE SLUG REJECTOR: RELEASE THIS CATCH THEN LIFT 50¢ SECTION UP AND OUT

NEXT, LIFT 5¢, 10¢ & 25¢ SECTION UP AND SWING OUTWARD



WHEN SLUG REJECTOR IS EQUIPPED WITH FLIPPER, NORMAL OPERATION REQUIRES SHORT SCREW AT "A" AND LONG SCREW AT "B".

TO LOCK OUT FLIPPER INTERCHANGE SCREWS WITH FLIPPER IN MAXIMUM COUNTER-CLOCKWISE POSITION.

Figure 20.

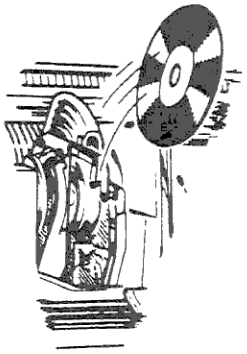
TROUBLE SHOOTING

Coins do not work right –

"Credit" lamps do not light when money is deposited.

No Sound –

Poor Sound –



Incorrect record cycling.

Phonograph is dead.
(Lights are out –
nothing operates)

TROUBLE SHOOTING CHARTS

Select-O-Matic

Q100 and Q160 MODELS

INDEX

Coins and Credits ..... 194 - 199
Slug Rejector, Coin Switches, Electric Selector, Single Pricing Unit, and Credit Accumulator Unit.

Selection System ..... 200 - 205
Selection Receiver, Electrical Selector and Credit Units.

Mechanism ..... 206 - 214

Sound System ..... 215 - 224
Amplifier, Speaker, Pickup, and Mute Switches.

Trouble Shooting Chart – Coins and Credits 1 - 2 Q100 and Q160

SERVICE CALL	EFFECT	CAUSE	CORRECTION
1. Rejects coins.	Coins sometimes fail to go through to cash box.	(a) Dirt or foreign matter in rejector.	Clean rejector
		(b) Incorrect adjustments in rejector.	Adjust rejector.
		(c) Bind in scavenger cable keeping rejector gates open.	Remove, straighten, and lubricate scavenger wire.
2. Coins drop through to cash box. Unable to select. "Select" light fails to come on.	Coins occasionally drop through to cash box without establishing credits.. SINGLE PRICING UNIT / CREDIT ACCUMULATOR UNIT	(a) Incorrect alignment of rejector and coin switch levers. Coins drop between levers.	Seat rejector fully into mounting frame. Align switch levers.
		(b) Dirty or incorrectly adjusted coin switches.	Clean and/or adjust coin switches.
		(c) Excessive spring pressure or poor contact on one of six credit switches.	Replace U-shaped spring or entire credit switch assembly.
		(d) Bind in credit solenoid plunger or gummed plunger.	Remove, clean and polish credit solenoid plungers. Clean solenoid coil sleeve.
		(e) Bind in credit solenoid linkage or pawl.	Clean and lubricate linkage and pawl.
		(f) One add solenoid or subtract solenoid pawl hanging on credit wheel.	Check for insufficient over-travel of all solenoids.
	All coins fail to turn on credit light and energize latch bar solenoid.	(g) Coin switch plug not seated in socket.	Replace plug and seat firmly in socket.
		(h) "Y" contacts of timing relay not closing.	Clean and adjust contacts.
		(i) Timing relay continuously energized by partially depressed button or mechanical binds in Electrical Selector keeping Hold Switch closed.	Release button and/or correct cause of bind.
		(j) Timing relay continuously energized by incorrectly adjusted Hold Switch in Electrical Selector.	Adjust switch for 1/32" gap (when buttons are released.)
		(k) Open circuit wiring or bad solder connection in credit circuit.	Check wiring and connections. See diagram – In Service Manual.

SERVICE CALL	EFFECT	CAUSE	CORRECTION
(Continued) 2. Coins drop through to cash box. Unable to select. "Select" light fails to come on.	*(Continued)* All coins fail to turn on credit light and energize latch bar solenoid. SINGLE PRICING UNIT	(l) Timing relay continuously energized by "W" contact in pricing unit.	Clear bind in cancel plunger linkage and/ or adjust "W" contacts.
		(m) Open circuit at wiper contact and collector ring of credit switch assembly.	Clean and adjust contact and collector ring.
		(n) Open circuit at ground connection (bearing) of credit switch assembly.	Clean, lubricate bearing with graphite.
		(o) Credit switch assembly binds and stops with switches out of line with credit plungers	Check mechanical adjustments of credit and cancel unit. Check for binds and worn parts.
	CREDIT ACCUMULATOR UNIT	(p) Timing relay continuously energized by "C" contact in credit unit.	Adjust contacts.
		(q) Open circuit through credit wheel in credit unit.	Adjust wiper contacts.
		(r) Credit wheel jammed at no credit position.	Locate cause and repair. See Service Manual for adjustments.
		(s) Blown fuse in Credit Unit.	Replace fuse.
	Only one type of coin fails to establish credits - others work every time.	*See 2 (a), (b), (d), (e) and (k) above . . . . .*	
		(t) Open credit solenoid.	Replace solenoid.
		(u) Dirty or incorrectly adjusted switches in HDU1.	Clean and adjust all switches in HDU1 as shown in Service Manual.
3. Free credits.	Continuous free credits. Select light stays on.	(a) Coin hangs on coin switch.	Adjust and check coin switch.
		(b) Coin hangs at bottom of rejector, keeps coin switch closed.	Check coin exits of rejector with new coins. Remove burrs or obstruction causing coins to hang.
(Continued)	*(Continued)*		

SERVICE CALL	EFFECT	CAUSE	CORRECTION
(Continued) 3. Free credits.	*(Continued)* Continuous free credits. Select light stays on.	(c) Coin switch incorrectly adjusted, - contacts stay closed.	Adjust and check contact gaps and pressures.
		(d) Shorted condenser across coin switch.	Replace condenser. See schematic in Service Manual.
	SINGLE PRICING UNIT / CREDIT ACCUMULATOR UNIT	(e) Credit switch fails to reset.	Adjust reset bracket in credit and cancel unit so it resets all credit switches.
		(f) Subtract solenoid pawl not engaging credit wheel.	Locate cause and repair. Refer to Service Manual for adjustment.
	Able to select by pressing number and letter buttons.	(g) Pricing tab in stepper in wrong position, when SPU1 or SPU1 H is used.	Set tab to proper position.
4. Too many credits for coins deposited.		(a) Reset pawl occasionally fails to engage next ratchet tooth of credit switch assembly.	Adjust cancel solenoid position and pawl arm stop for correct pawl stroke.
	SINGL' PRICI' UN	' Credit switches jump to ON position when -el coil operates, - credit switch pres- -ht.	Replace U - shaped spring in switch or entire credit switch assembly.
		sionally fails to reset.	Adjust reset bracket in credit and cancel unit so it resets all credit switches.
		-d. Switches	Clean and adjust coin switches. Refer to Service Manual.
	25 a' / CREDIT ACCUMULATOR		Adjust as shown in Service Manual. Check -ially, - Coil Position adjustment and - adjustment.
			-e Service Manual. Check -tion adjustment and
(Continued)			

SERVICE CALL	EFFECT	CAUSE
(Continued) 5. Not enough credits for coin deposited.	*(Continued)* 5¢ coin occasionally fails to establish credit.	(h) Incorrect adjustment of [illegible]
CREDIT ACCUMULATOR UNIT	Add Solenoids actu- ally add proper num- ber of credits for [illegible] deposited [illegible]	(i) [illegible]
(BG)	6 (...	

SERVICE CALL	EFFECT	CAUSE	CORRECTION
(Continued)	*(Continued)*		
4. Too many credits for coins deposited.	5¢ coin occasionally gives two or more credits	(g) Incorrect Add 1 Drive adjustments. Credit Wheel driven too far.	Adjust as shown in Service Manual. Check especially, - Coil Position adjustment and Pin Stop No. 2 adjustment.
CREDIT ACCUMULATOR UNIT	Add solenoids actually add proper number of credits but Subtract Solenoid occasionally fail to subtract enough credits for selections made.	(h) Incorrect adjustment of Subtract Solenoid or solenoid linkages, or, bind in pawl pivots.	Check Subtract Solenoid adjustments as shown in Service Manual and adjust as required. Check especially Drive Pin entry, Coil Position, and Pin Stop No. 2 adjustments. Check for binds in pawl pivots.
5. Not enough credits for coin deposited.	SINGLE PRICING UNIT	(a) "Machine gun" action, "S" contact blade vibrates when selection is made taking off additional credits.	Tighten screws holding switch stack. Adjust "S" contact roller blade for pressure against cam and adjust S, T and U contact gaps as shown in Service Manual.
		(b) Credit switch jumps to OFF position when cancel coil operates. Credit switch pressure too light.	Replace U - shaped spring in switch - or entire credit switch assembly.
	25¢ coin occasionally gives only five (or less) credits.	(c) Incorrect adjustment of Credit Wheel Stop, Detent, or Add 6 Drive.	Check adjustments of Credit Wheel Stop, Detent, and Add 6 Drive. Check especially Detent pressure Pawl Spring pressure, Drive Pin clearance, and Coil position. Make adjustments as required.
		(d) Incorrect adjustment of 25¢ coin switch.	Clean and adjust 25¢ coin switch.
CREDIT ACCUMULATOR UNIT	10¢ coin occasionally gives only one credit.	(e) Incorrect Add 2 Drive adjustment.	Adjust as shown in Service Manual.
		(f) Incorrect adjustment of 10¢ coin switch.	Clean and adjust 10¢ coin switch.
	5¢ coin occasionally fails to establish credit.	(g) Incorrect Add 1 Drive adjustment.	Adjust as shown in Service Manual.
(Continued)	*(Continued)*		

SERVICE CALL	EFFECT	CAUSE	CORRECTION
(Continued) 5. Not enough credits for coin deposited. CREDIT ACCUMULATOR UNIT	*(Continued)* 5¢ coin occasionally fails to establish credit.	(h) Incorrect adjustment of 5¢ coin switch.	Clean and adjust 5¢ coin switch.
	Add Solenoids actually add proper number of credits for coins deposited but Subtract Solenoid occasionally take off too many credits when selections are made.	(i) Incorrect adjustment of Subtract Solenoid or solenoid drive.	Check Subtract Solenoid adjustments and correct as required. Check especially Pin Stop No. 2 adjustments and Coil Position adjustments.
6. Occasionally fails to take off all credits. (See also (4 h) CREDIT ACCUMULATOR UNIT	10¢ credit established then selection is made. Occasionally fails to take off all credits, - leaves 5¢ worth of credits.	(a) Contacts A and B, in Credit Accumulator Unit dirty or incorrectly adjusted.	Clean contacts and adjust.
		(b) Open circuit wiring associated with contacts A and B.	Check solder connections and wiring to contacts A and B.
7. "Machine gun" action. Takes off all credits.	Takes off all credits when a letter and a number are held down at the same time.	(a) "Z" contacts in timing relay fail to make.	Clean and adjust "Z" contacts.
		(b) Defective wiring or solder connection in hold switch circuit.	Check complete hold switch circuit. See schematic in Service Manual.
8. Credit light does not light. *(Continued)*	Credit system works properly. *(Continued)*	(a) Credit bulb burned out.	Replace bulb.
		(b) Credit bulb resistor on electrical selector is open.	Replace resistor.

SERVICE CALL	EFFECT	CAUSE	CORRECTION
9. Four credits for 50¢ all other coins work OK.	SPU1 II	(a) Dirty or incorrectly adjusted switches in SPU1 II	Clean and adjust switches as shown in Service Manual.
	HDU1 & SPU1	(b) "Z" contact of HDU 1 dirty or incorrectly adjusted.	Clean and adjust contacts as shown in Service Manual.
10. 50¢ fails to give any credits, other coins work OK.		(a) 50¢ coin switch dirty or incorrectly adjusted.	Clean and adjust 50¢ coin switch.
	HDU 1	(b) Dirty or incorrectly adjusted switches in HDU 1.	Clean and adjust all switches in HDU 1 as shown in Service Manual.
11. Free credits HDU1 installed in phonograph (Also see 3 above).	HDU1 Motor runs continuously.	(a) "U", "V", or "Z" contacts in HDU1 fail to open.	Adjust contacts as shown in Service Manual.
12. Letter and number buttons stick in latched position.	Credit lamp is on.	(a) Stepper stuck in advanced position.	Free stepper. Lubricate and adjust as shown in Service Manual.
		(b) Stepper pricing unit tab loose or in wrong position.	Replace tab properly.
		(c) Cancel start circuit open through stepper.	Clean and adjust contacts. See schematic in Service Manual.
		(d) Cancel start circuit open in electric selector.	Check start circuit. See schematic in Service Manual.
	Credit lamp is off.	(e) Electric selector latch bar solenoid is residual.	Replace latch bar solenoid.
		(f) Electric selector latch bar mechanism binding.	Locate cause and repair.
13. Credit light on. Buttons fail to latch.	Selections can be made if letter and number buttons are pressed at the same time.	(a) Latch bar circuit open in electrical selector.	Check latch bar circuit. See schematic in Service Manual.
		(b) Electrical selector latch bar mechanism binding.	Locate cause and repair.

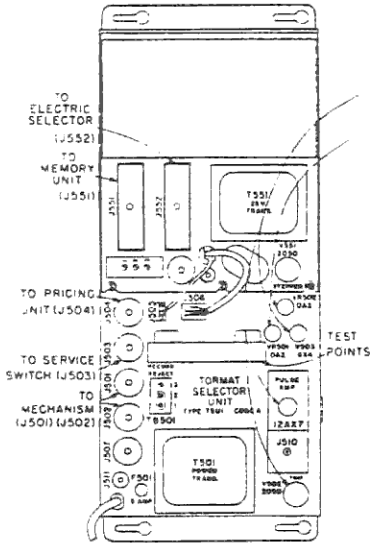
Trouble Shooting Chart - Coins and Credits 9, 10, 11, 12 and 13. Q100 and Q160

SERVICE CALL	EFFECT	CAUSE	CORRECTION
1. All selections "dead".	Carriage scans twice and stops without playing selected records.	See Trouble Shooting Procedure Pages 202 - 205.	
2. One selection fails to play; other 159 selections play OK.	Carriage scans twice stops without stopping to pick up this selection.	(a) Dirty contact rivet on Tormat Memory Unit.	Use clean cloth and Carbon Tet. to clean contact rivets. DO NOT USE ABRASIVES.
	Stops OK for all other selections and plays them.	(b) Incorrect timing of Detent Switch, or incorrect alignment of Tormat Memory Unit and Contact Plunger Block. (Sparking occurs on contact block plungers when carriage scans.)	Clean Detent Switch and adjust as shown in Service Manual. Check Tormat Memory Unit and Contact Plunger Block adjustments as shown in Service Manual.
		(c) Open read-out loop in Tormat Memory Unit. (Open circuit from contact rivet to contact bar.)	Check with ohmmeter from contact rivet to contact bar. If read-out loop is open, replace Tormat Memory Unit.
3. Plays only left sides of records or plays only right sides of records.	Carriage does not stop to pick up any selected right sides of records (or vice versa); scans twice and stops. Plays all selected left sides OK.	(a) RS contacts (or LS) on Reversing Switch dirty or incorrectly adjusted.	Clean Contacts and adjust.
		(b) Open circuit from RS contacts (or LS) of Reversing Switch to R (or L) contact on Contact Plunger Block. Check for broken pigtail wire on contact block.	Trace circuit and correct as required.
4. Carriage "occasionally" scans twice and stops without playing any selected records.		(a) Intermittent failure of write-in, read-out, or trip.	If sparking occurs on contact block plungers see 3b above. Repeat each test of 1 above as many times as necessary to locate trouble. (Especially G, H, and J tests).
5. Carriage plays extra selection in letter or number series when a selection is made. EXAMPLE: (Several A selections play when any A selection is made)	Record rejects when selection is made.	(a) "N" or "R" contact of timing relay No. 2 not making good contact in rest position.	Clean and adjust contacts.
		(b) Electric selector or memory unit shorted to ground.	Locate short with ohmmeter and repair. See write-in schematic in Service Manual. (Tests G, H, J, K and L of 1 above may be used to locate trouble)
		(c) Stepper Plug not properly seated in TSU.	Seat Plug.

TORMAT SELECTION SYSTEM TROUBLE SHOOTING PROCEDURE
for
SELECT-O-MATIC Q100 and Q160

NOTE: This procedure must be followed carefully without bypassing steps. Each test hinges on having conducted a previous test. This permits the procedure results to dicate the trouble remedy.

TROUBLE: Mechanism scans when selections are made but does not trip on ANY selected record.
TOOLS REQUIRED: 2 jumper wires, a Seeburg Test Lamp and a flashlight battery.
PROCEDURE: Open the back door and inspect the following:



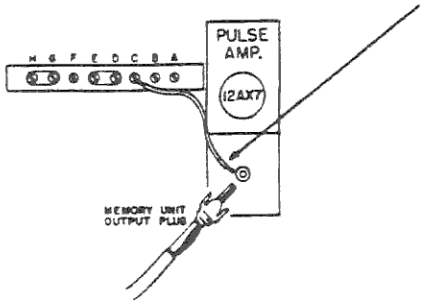
– A TEST –

1. Check that all plugs are properly seated.
2. Check that all tubes are lighted.
3. Check for purple glow inside both OA2 tubes. *(no glow can be caused by a weak 6X4 tube)*

IF A LOOSE PLUG OR BAD TUBE IS FOUND AND CORRECTED, CHECK NORMAL OPERATION OF THE PHONOGRAPH.

IF NO TROUBLE IS FOUND, ESTABLISH SEVERAL FREE CREDITS ON THE PHONOGRAPH AND PERFORM B TEST. *(Be sure the service switch is in the play position for all tests)*

NOTE: After any trouble is located and repaired, remove jumpers, connect links to normal, replace all plugs and check the phonograph for normal operation.

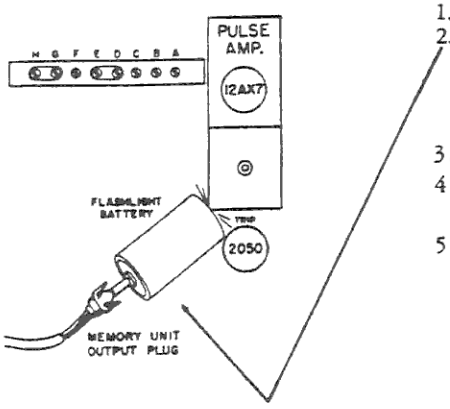


– B TEST –

1. Remove cover from the test terminals.
2. Remove the memory unit output plug from the pulse amplifier.
3. Connect one end of a jumper wire to "C", leaving other end free.
4. Make any selection and while mechanism is scanning, momentarily connect the free end of the jumper wire to the input of the pulse amplifier. *(Make connection down inside socket)* Mechanism should immediately trip.

IF MECHANISM TRIPS Reject record, allow mechanism to scan to stop. PERFORM C TEST.

IF MECHANISM DOES NOT TRIP Use M TEST to pinpoint trouble.

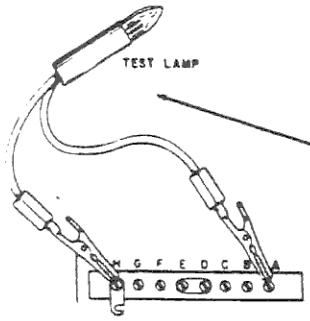


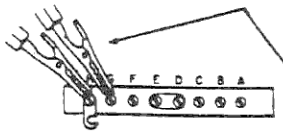
– C TEST –

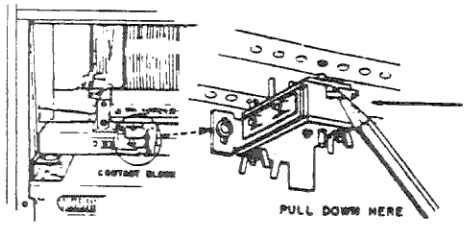
1. Remove jumper wire from "C".
2. Momentarily connect the tip of the memory unit output plug to the tip of a good flashlight battery with the case of the battery held against the corner of the pulse amplifier. *(This is the same as making all selections on the tormat)*
3. Replace memory unit output plug into pulse amplifier.
4. Make any selection. When selection is made, mechanism should immediately trip and play.
5. Reject record and note if next record plays. *(If desired, all records could be played)*

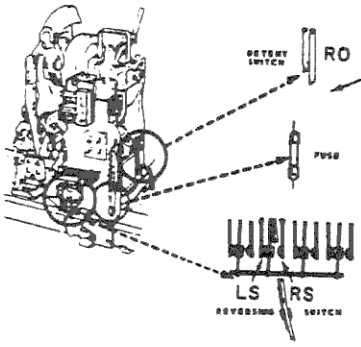
IF MECHANISM TRIPS ON AT LEAST TWO RECORDS Pull out memory unit output plug, reject record, allow mechanism to scan to stop and replace plug. Use G TEST to pinpoint trouble.
IF MECHANISM SCANS OR PLAYS ONLY ONE RECORD Use D TEST to pinpoint trouble.

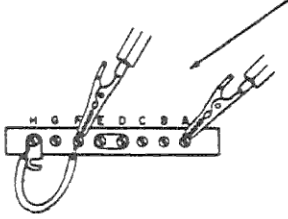
SERVICE CALL	EFFECT	CAUSE	CORRECTION
6. Carriage plays all selections except one number series or one letter series.	Carriage scans twice and stops when defective series is selected.	(a) Electric selector switch or plug connection associated with defective letter or number is open.	Check circuit with ohmmeter and repair. See schematic in Service Manual.
7. Carriage plays every selection regardless which selection is made.		(a) Memory unit output plut is not properly seated in the pulse amplifier.	Seat plug so outer shell is making good contact.

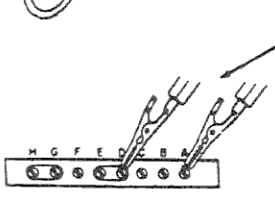












– D TEST (READ OUT) –

(Be sure service switch is in play position for all tests)

1. Remove mechanism access door on rear of cabinet.
2. Open link between "G & H". *(Turn off power while moving link)*
3. Connect the Seeburg Test Lamp between "H" and "A". Lamp should glow brightly. *(Be sure power is on)*

IF LAMP GLOWS BRIGHTLY PERFORM E TEST.

IF LAMP IS DIM OR DOES NOT LIGHT

1. Pull out service switch plug from selection unit. If lamp now glows brightly, REPLACE OR REPAIR SERVICE SWITCH OR CABLE.

If lamp does not light after service switch plug is pulled, REPLACE SELECTION UNIT. *(Read out circuit is defective)*

– E TEST (READ OUT) –

1. Connect the test lamp between "G" and "H".
2. Make any selection. As mechanism scans, lamp should flash at each record space.
3. As mechanism scans back away from A1, pull down on outside plunger of contact block. Lamp should go out or flash very dimly while plunger is held down.

IF LAMP CONTINUES TO FLASH WHEN PLUNGER IS PULLED DOWN Check for short to ground in carriage RO circuit.

IF LAMP REMAINS STEADILY ON AS MECHANISM SCANS Check for short to ground from RO contact to plug.

IF LAMP IS DIM OR NOT LIGHTED AS MECHANISM SCANS Check for open fuse, sticky plungers, broken wires in carriage RO circuit.

IF LAMP FLASHES AT EACH RECORD SPACE AND GOES OUT WHILE PLUNGER IS HELD DOWN PERFORM F TEST.

– F TEST (READ OUT) –

1. With "G" and "H" open, connect test lamp between "F" and "A".
2. Momentarily connect a jumper wire between "H" and "F". Lamp should flash when connection is made.

IF LAMP FLASHES REPLACE TORMAT MEMORY UNIT *(Defective output)*

IF LAMP DOES NOT FLASH REPLACE SELECTION UNIT. *(Defective read out electronics)*

– G TEST (WRITE IN) –

1. Connect a Seeburg Test Lamp between "D" and "A". Lamp should not glow. If lamp glows, PERFORM J TEST.
2. While watching lamp, make any selection. Lamp should not flash.

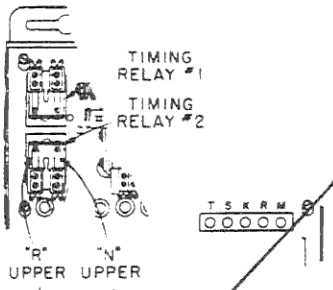
IF LAMP FLASHES PERFORM H TEST

IF LAMP DOES NOT FLASH PERFORM J TEST

– H TEST (WRITE IN) –

1. Connect the test lamp between "K" and "A".
2. While watching lamp, make any selection.

IF LAMP FLASHES PERFORM TEST #1A BELOW
IF LAMP DOES NOT FLASH PERFORM TEST #1C BELOW

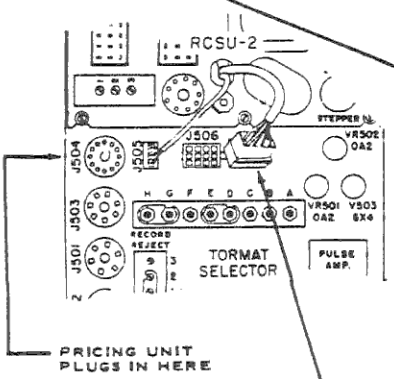


TEST #1A Connect test lamp between "R" and "A".
Make any selection while watching lamp.
IF LAMP FLASHES PERFORM TEST #1B BELOW
IF LAMP DOES NOT FLASH CLEAN "R" CONTACT - TIMING RELAY #2

TEST #1B Connect test lamp between "M" and "A".
Make any selection while watching lamp.
IF LAMP FLASHES REPLACE TORMAT MEMORY UNIT *(Open ground)*
LAMP DOES NOT FLASH REPLACE ELECTRIC SELECTOR
(Open circuit pin #31 or defective starting switch)

TEST #1C Connect test lamp between "S" and "A".
Make any selection while watching lamp.
IF LAMP FLASHES REPLACE TORMAT MEMORY UNIT *(Open circuit pin #31)*
IF LAMP DOES NOT FLASH PERFORM TEST #1D BELOW

TEST #1D Connect test lamp between "T" and "A".
Make any selection while watching lamp.
IF LAMP FLASHES REPLACE ELECTRIC SELECTOR *(Open circuit pin #32 or defective starting switch)*
IF LAMP DOES NOT FLASH CLEAN "N CONTACT – TIMING RELAY #2.

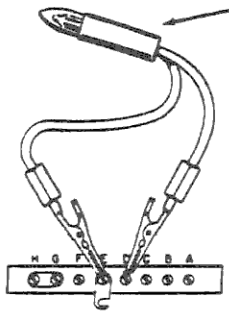


– J TEST (WRITE IN) –

1. Open link between "D" and "E".
2. Connect test lamp between "D" and "E". Lamp should show a dim glow or not glow at all.
3. IF LAMP IS LIGHTED BRIGHTLY: Pull out pricing unit plug from selection unit while watching lamp.

IF LAMP DIMS OR GOES OUT when pricing unit plug is pulled. REPLACE PRICING UNIT. (wire in contacts shorted).

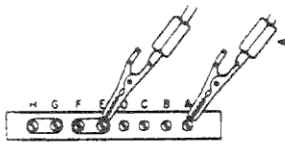
IF LAMP REMAINS BRIGHT after pulling pricing unit plug, reinsert pricing unit plug in selection unit socket.



1. Pull out stepper plug from selection unit. If lamp dims, check for shorted "P" contact.
2. If lamp does not dim when stepper plug is pulled, replace selection unit .(shorted diode)

IF LAMP GLOWS DIMLY OR IS NOT LIGHTED PERFORM K TEST.

– K TEST (WRITE IN) –



1. Connect link between "E" and "F".
2. Connect test lamp between "E" and "A".
3. While watching lamp, make any selection. Lamp should flash.

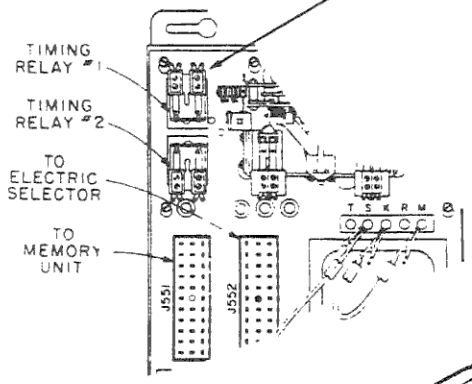
IF LAMP FLASHES PERFORM L TEST

IF LAMP DOES NOT FLASH

1. Press and release timing relay #1 while watching lamp.

IF LAMP FLASHES REPLACE PRICING UNIT *(Open write in contacts)*

IF LAMP DOES NOT FLASH REPLACE SELECTION UNIT *(Defective write in circuit)*



–L TEST (WRITE IN) –

1. Remove electric selector 33 pin plug from RCSU2.
2. Connect link to "D" and "E". *(Tighten screws)*
3. Connect a jumper wire from "D" to "S".
4. Connect another jumper wire from "K" to "M".
5. Press and release timing relay #1. Mechanism should scan to selection V8 and play it. *****

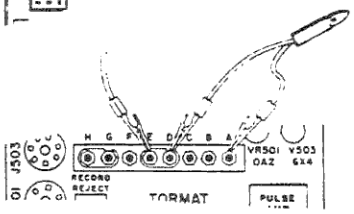
IF SELECTION V8 PLAYS***** REPLACE ELECTRIC SELECTOR *(Shorted to ground)*

IF NO SELECTION PLAYS

1. Remove memory unit 33 pin plug from selection receiver.
2. With both jumper wires connected as above, connect test lamp between "E" and "A".
3. Press and release timing relay #1.

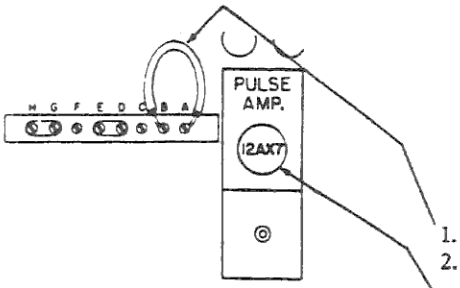
IF LAMP FLASHES REPLACE MEMORY UNIT *(Shorted to ground)*

IF LAMP DOES NOT FLASH REPLACE SELECTION UNIT *(Write in wiring shorted)*



*****Q100 Selection K10 – Q160 Selection V8

– M TEST (TRIP) –



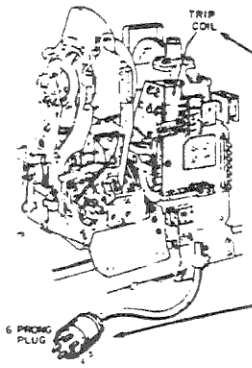
1. Remove jumper wire from "C" and connect to "A".
2. Make any selection. While mechanism is scanning, momentarily connect free end of jumper wire to "B". Mechanism should trip.

IF MECHANISM TRIPS

1. Install new 12AX7 tube in pulse amplifier.
2. Replace memory unit output plug into pulse amplifier and check normal operation of the phonograph.
3. If phonograph does not select, REPLACE SELECTION UNIT *(Pulse amplifier or circuit defective)*

IF MECHANISM DOES NOT TRIP

1. Install new 2050 tube in selection unit.
2. Repeat trip test. If mechanism does not now trip, check mechanism trip coil and circuit.



Trouble Shooting Chart – Mechanism 1 Q100 and Q160

SERVICE CALL	EFFECT	CAUSE	CORRECTION
1. Motor fails to run.	Play Control Switch is closed but motor does not run.	(a) Play Control Switch contacts not making.	Clean and adjust contacts.
		(b) Reversing Switch contacts not making.	Clean and adjust G, H, J, and K contacts.
		(c) Faulty Reversing Switch.	Repair or replace. Adjust switch and brackets as shown in Service Manual.
		(d) "O" contacts not making. (Motor runs if started by hand).	Clean and adjust "O" contacts.
		(e) Defective motor condenser.	Replace condenser.
		(f) Broken motor coupling or loose set screws. (Motor runs but does not drive mechanism.)	Replace coupling or tighten screws as required.
		(g) Bind in motor.	Remove bind and lubricate bearings or replace motor as required.
		(h) Bind in mechanism. Check by carefully turning motor shaft. DO NOT FORCE AND DO NOT TURN FLYWHEEL BY HAND.	Check for foreign matter that may have fallen into mechanism. Check for normal clearances and lubrication of gears, cams, shafts, etc.
		(i) Open motor winding.	Repair or replace motor.
		(j) Open wiring or solder connection in motor circuit.	Check motor circuit and repair. See schematic in Service Manual
	AUTO-SPEED UNIT	(k) "D" or "B" contact in Auto Speed Unit fails to close.	Clean and adjust "D" or "B" contacts.
	Motor fails to run because Play Control does not operate when selections are made.	(l) Service Switch lever in OFF position.	Move to PLAY position.
		(m) Play Control Add Solenoid fails to operate due to failure of "D" contact in Credit Accumulator Unit or "U" contact in Single Pricing Unit.	Clean and adjust "D" or "U" contacts in credit unit.

SERVICE CALL	EFFECT	CAUSE	CORRECTION
(continued) 1. Motor fails to run.	*(continued)* Motor fails to run because Play Control does not operate when selections are made.	(n) Play Control Add Solenoid operates OK but contacts fail to close.	Clean contacts or make correct adjustments.
2. Carriage occasionally (or always) scans *only once* instead of twice when selection is made.	Scans once and stops. Occasionally fails to play all selections made then plays "left over" selections when another selection is made.	(a) Sticking Play Control pawls.	Check pawls for possible binds.
		(b) Scan subtract switch on carriage making poor contact.	Clean and adjust contacts.
3. Carriage scans continuously.	Plays selections OK but never stops scanning.	(a) Play Control contacts staying closed due to incorrect adjustment, or ratchet sticking.	Adjust contacts. Clean and lubricate ratchet.
		(b) Scan subtract switch on carriage not closing.	Clean and adjust contacts.
		(c) Open circuit from subtract switch to subtract solenoid.	Trace circuit and repair. See schematics in Service Manual.
4. Fuse blows occasionally during reversal of motor.	Phonograph inoperative.	(a) Reversing switch contacts incorrectly adjusted.	Clean and adjust G, H, J and K contacts for proper "break before make".
5. "Motor runs slow."	Motor sluggish; slow while scanning and while playing resulting in "poor tone."	(a) Lack of lubrication.	Lubricate motor bearings and mechanism.
		(b) Bind in motor bearings.	Clean and lubricate or replace motor.
		(c) Bind in mechanism.	Lubricate bearings, gears, and clutch assembly. Check end play on flywheel shaft, drive worm and on clutch shaft.
		(d) Partially shorted motor winding.	Replace motor.

SERVICE CALL	EFFECT	CAUSE	CORRECTION
(continued) 5. "Motor runs slow."	"Motor slow" while playing but normal while scanning.	(e) "O" contacts in Cam Switch closed in play position.	Adjust contacts.
		(f) Poor clamping of record due to burr or dirt in flywheel hole. (Motor actually runs at normal speed but record turns slowly.)	Remove burr or dirt from flywheel hole to allow normal clamping of records.
	AUTO-SPEED UNIT 33-1/3 R.P.M.	(g) Drive or Speed Control in Auto Speed Unit incorrectly adjusted.	Adjust drive and Speed Control on Auto Speed Unit. See Service Manual for adjustments.
	AUTO-SPEED UNIT 45 R.P.M.	(h) Clamp arm switch remains closed with 45 rpm. record in play position.	Adjust clamp arm switch.
6. Motor sluggish or late in reversing.	Motor speed appears normal but is sluggish in reversing. Carriage hits rubber bumpers at ends of base.	(a) "O" contacts in cam switch not closing in scan position.	Clean and adjust contacts.
		(b) Reversing switch operates too late or rubber bumpers incorrectly adjusted.	Adjust Rubber Bumpers and Reversing Switch Brackets.
		(c) Motor starting condenser defective.	Replace condenser.
7. Noisy mechanism.	Whirring noises from general area of motor.	(a) Motor coupling set screws loose and hitting carriage casting.	Tighten set screws.
		(b) Oil cups of motor touching carriage casting.	Turn motor so cups don't touch.
	Whirring or chattering noises while carriage scans.	(c) Excessive end play in drive worm, flywheel shaft, or clutch shaft.	Adjust thrust screws for .002" end play. Avoid binding.
		(d) Selection playing indicator chattering.	Check for loose parts. Clean guides.
	Ticking noises while scanning or playing.	(e) Clutch 1, 2, 3 or 4 adjustments incorrect.	Adjust as shown in Service Manual.
(continued)		(f) Bind in cam shaft bearings prevents clutch from dropping freely into play position.	Clean and lubricate bearings.

SERVICE CALL	EFFECT	CAUSE	CORRECTION
(continued) 7. Noisy mechanism.	Scraping noise. Records rub magazine or transfer arm while playing.	(g) Badly warped record.	Replace record.
		(h) Magazine misaligned.	Adjust Magazine and Transfer Arm (If Magazine or Transfer Arm is moved, be sure to adjust Memory Unit and Contact Plunger Block.)
		(i) Transfer Arm raises too high.	Adjust Transfer Arm.
8. Carriage does not stop to pick up selected records.	Scans twice and stops.	See Trouble Shooting Chart, "Selection System".	
9. Carriage stops and picks up selected records but does not play them.	Puts records back without playing them. Scans twice and stops.	(a) Clutch No. 4 adjustment set too far in.	Adjust clutch No. 4 as shown in Service Manual.
	Puts 33-1/3 rpm. records back without playing them. Scans to next selected record.	(b) Tube or component failure in 44 cycle supply of Auto-Speed Unit.	Check circuit of Auto-Speed Unit. See schematic in Service Manual.
		(c) "F" contact in Auto-Speed Unit fails to close.	Clean and adjust "F" contact.
	Puts 33-1/3 rpm. record in play position and motor stops.	(d) "C" or "A" contact in Auto-Speed Unit fails to close.	Clean or adjust "C or A" contact.
10. Plays same record repeatedly without scanning.	Puts record back into magazine then immediately brings it up and plays it again.	(a) Badly warped record fails to return fully into magazine space.	Replace with good record.
		(b) Bind or incorrect adjustment in Safety Lever.	Clean and lubricate Safety Lever.
11. Record transfers in and out of magazine continuously without playing or scanning.	Trip Solenoid energized continuously.	(a) "E" contact in Auto-Speed Unit keeps Trip Solenoid energized.	Adjust "E" contact.

Trouble Shooting Chart – Mechanism 12 Q100 and Q160

SERVICE CALL	EFFECT	CAUSE	CORRECTION
12. Record on flywheel fails to trip off.	Trip Solenoid fails to trip at end of record.	(a) Lint accumulation around tip of needle.	Remove lint and check for proper Pickup Lifting and Brush Position adjustments.
		(b) Needle worn, chipped, or loose in mounting.	Replace needle.
		(c) Bad record; cut-off groove defective.	Replace with good record.
		(d) Trip switch pressure "too heavy".	Adjust trip switch.
		(e) Trip switch "cut-off" adjustment incorrect.	Adjust trip switch. (Note: If actuator is moved be sure to adjust Reset Plate.)
		(f) Nylon trip lever binding.	Clean nylon pivots and align supporting lug to eliminate bind.
		(g) Faulty Trip Switch.	Repair or replace switch.
		(h) Pickup cradle pivots binding.	Adjust pivot to eliminate binds.
		(i) Pickup out of balance.	Adjust pickup balance.
		(j) Pickup needle pressure too light.	Adjust needle pressure.
		(k) "V" contacts not making.	Clean and adjust "V" contacts.
		(l) Erratic failure of Trip Tube.	Replace faulty Trip Tube in Format Selection Receiver.
		(m) Erratic open in Trip Solenoid or in trip solenoid circuit.	Check trip solenoid, mechanism cable, and "trip-off" circuit and repair as required. See schematics in Service Manual.
	Trip solenoid energized but mechanism fails to unclamp or return record to magazine.	(n) Bind in clutch.	Clean and lubricate clutch (use Seeburg Special Purpose Oil) or remove bind as required.
		(o) Bind in trip mechanism or dash pot.	Locate and eliminate bind.

SERVICE CALL	EFFECT	CAUSE	CORRECTION
13. Flywheel turns but no action. Motor runs continuously.	Carriage stops at selected record but does not bring it up. "Sits and Spins".	(a) Carriage cable tangled or "hung up" on obstruction.	Straighten cable or remove obstruction as required.
		(b) Selection Playing Indicator binding.	Clean guides; remove bind as required.
		(c) Guide Rollers bind on gear rack.	Check and adjust.
		(d) Bind in Clutch, Trip Mechanism, or carriage rollers.	Eliminate bind and lubricate.
		(e) Clutch 1 adjustment screw down too far.	Adjust Clutch 1.
	Carriage fails to scan after returning record to magazine. Clutch does not drop into scan position.	(f) Safety plunger fails to move out of way of clutch link because of bind.	Clean and lubricate plunger. Check for bind (Use Seeburg Special Purpose Oil.)
		(g) Bind in Clutch or Trip Mechanism.	Eliminate bind and lubricate.
14. Carriage "skips" one position past correct selection.	Plays wrong selection.	(a) Bind in clutch.	Clean and lubricate clutch; use Seeburg Special Purpose Oil.
		(b) Bind in Trip Mechanism or sluggish dash pot.	Remove bind and lubricate Trip Mechanism or replace dash pot as required.
		(c) Clutch 1 adjustment down too far or Clutch 2 out too far.	Check and adjust Clutch 1 and 2.
15. Record incorrectly clamped against flywheel. Centering pin failed to enter record hole.	Record fails to play and fails to trip off.	(a) Transfer Arm fails to bring record up fully to clamping position due to bent magazine separator, or due to misalignment of Magazine and Transfer Arm.	Check Transfer Arm action in all record spaces to insure proper transfer of all records. Remove binds or make adjustments as required.
		(b) Transfer Arm 2 adjustment incorrect.	Adjust Transfer Arm 2.
16. Pickup fails to land properly at beginning of record.	Needle falls off edge of record or lands in too far.	(a) Undersized or off-standard record.	Replace with good record.
		(b) Needle landing adjustment incorrect.	Adjust as shown in Service Manual.
	Needle lands at random positions anywhere from beginning to end of record.	(c) Pickup lock adjustment incorrect fails to lock pickup cradle in scan position.	Adjust lock adjustment.

SERVICE CALL	EFFECT	CAUSE	CORRECTION
17. Pickup skids in at beginning of record.	Pickup skids across first few grooves or across record to trip off.	(a) Needle worn, chipped or loose in mounting.	Replace needle.
		(b) Trip switch reset plate down too far resulting in "booster action".	Adjust Trip Switch Reset Plate.
		(c) Pickup badly out of balance.	Adjust pickup balance.
18. Record starts over after playing part way.	Needle skids back toward start of record after playing part way.	(a) Needle worn, chipped or loose in mounting.	Replace Needle.
		(b) Pickup badly out of balance.	Adjust pickup balance.
		(c) Needle pressure adjustment too light.	Adjust needle pressure.
19. Early trip-off.	Trips before end of record.	(a) Cut-off adjustment incorrect.	Adjust record cut-off and reset plate position.
		(b) Trip switch pressure too light. Switch trips due to vibration.	Adjust trip switch pressure.
		(c) Pickup badly out of balance.	Adjust pickup balance.
		(d) Needle pressure adjustment too light	Adjust needle pressure.
		(e) Off-standard records with longer than normal playing surface.	If necessary, adjust trip switch actuator and reset plate to compensate for off-standard records or replace records.
20. Pickup gets "hung-up" on brush bracket due to magnetic attraction.	Fails to play record. Fails to trip off.	(a) Pickup cartridge too close to brush bracket when shifting. Magnetic attraction causes it to "hang-up".	Loosen brush bracket screws and move bracket toward back, farther away from pickup cartridge.
21. Pickup gets "hung-up" along playing surface of record.	Needle plays same groove over and over. Small section of playing surface wears out.	(a) Record groove faulty; broken.	Replace record.
		(b) Pickup does not clear brush while playing.	Adjust brush clearance.
		(c) Pickup fails to unlock fully for playing of records.	Adjust pickup release.
(continued)	*(continued)*		

SERVICE CALL	EFFECT	CAUSE	CORRECTION
(continued) 21. Pickup gets "hung-up" along playing surface of record.	*(continued)* Needle plays same groove over and over. Small section of playing surface wears out.	(d) Pickup cradle pivots too tight.	Adjust pivots to eliminate bind.
		(e) Pickup out of balance.	Adjust pickup balance.
		(f) Needle pressure adjustment too light.	Adjust needle pressure.
22. Excessive record wear.	Records wear faster than normal.	(a) Worn or chipped needle.	Replace needle.
		(b) Incorrect needle pressure.	Adjust needle pressure.
		(c) Pickup cradle pivots too tight.	Adjust pivots to eliminate binds.
		(d) Pickup out of balance.	Adjust pickup balance.
		(e) Excessive dust or dirt on records. Bad records; poor record material.	Wipe records with clean damp cloth. Replace bad records.
23. Pickup "Chatters" while shifting.	Pickup does not shift smoothly from side to side.	(a) Pickup cradle shaft dirty or gummy.	Clean and lubricate pickup cradle shaft.
		(b) Pickup return adjustment too tight.	Adjust return adjustment.
		(c) Pickup locking screw in too far. Screw tip drags along crank while shifting.	Adjust locking screw.
24. Pickup arm is not reset properly after playing record.	Pickup hangs up on brush when resetting.	(a) Pickup return adjustment incorrect.	Adjust return adjustment.
		(b) Pickup lifts too far off record after playing.	Adjust for correct pickup lift.
25. Needle scrapes across record when pickup resets.	Records scratched.	(a) Pickup fails to lift from record before resetting.	Adjust for pickup lift.
		(b) Pickup out of balance.	Adjust pickup balance.
		(c) Pickup arm roller binding.	Clean and lubricate roller at base of pickup arm.

SERVICE CALL	EFFECT	CAUSE	CORRECTION
26. Pickup hits flywheel or stripper plate when lifting off of record.	Possible damage to needle or pickup cartridge.	(a) Pickup lifts too far off record after playing.	Adjust for correct pickup lift.
27. Excessive lint accumulation on needles.	Distorted sound.	(a) Brushes incorrectly adjusted and fail to clean needles.	Check pickup lift and brush clearance adjustments and correct as required.
		(b) Excessive lint and dust from records.	Remove lint from needles. Wipe records with clean damp cloth.
28. Popularity meter fails to work.	No indication of record popularity.	(a) C, SC, or IC contacts fail to make.	Clean and adjust contacts.
		(b) Open circuit or open solenoid.	Trace and repair or replace solenoid. See schematic in Service Manual.
		(c) Mechanical bind or incorrect adjustment.	Remove bind or adjust.

SERVICE CALL	EFFECT	CAUSE	CORRECTION
1. No sound from any speakers.		See Trouble Shooting Procedure Page 220.	
2. Distorted sound or no sound from one side of pickup- other side normal.	Mechanism operation normal.	(a) Needle chipped, broken, or missing.	Replace needle.
		(b) Dirt accumulated on stylus.	Clean carefully. Check Pickup Lifting and Brush Position adjustments as shown in Service Manual.
		(c) Armature assembly not fully seated in bottom of pickup cartridge slot.	Slide armature assembly fully into slot.
3. Intermittent sound.	Volume drops and returns suddenly.	(a) See Sound System Trouble Shooting Procedure - Repeat tests until trouble is located (1 above).	
		(b) Open or high resistance pickup coil .	Replace pickup cartridge if necessary. D.C. resistance of 246796 pickup should be approximately 1800 ohms.
	Volume drops and returns slowly.	(c) Tube loose in socket.	Check socket pin connections and form lugs for good contact. Seat tube firmly in socket.
		(d) Defective tube.	Check AVC 12AX7 tube and 6BJ6 tube.
		(e) Loose connection in amplifier.	Locate and repair.
		(f) Squelch switch for automatic volume compensator.	Clean and adjust MS contacts.
		(g) Open circuit to squelch switch.	Check cable, plug and socket connections from MS contacts into amplifier.
4. Low volume.	Volume low at all times.	(a) Defective tube.	Replace.
		(b) Volume control not turned up or shorted.	Adjust control or remove short.
(continued)	*(continued)*	(c) Armature assemblies not fully seated in bottom of pickup cartridge slots.	Slide armature assemblies fully into slots.

SERVICE CALL	EFFECT	CAUSE	CORRECTION
(continued) 4. Low volume.	*(continued)* Volume low at all times.	(d) See Sound System 3, f and g.	
		(e) Remote volume control plug or dummy plug loose, or plug connection loose.	Seat plug firmly. Check connections in volume control plug or dummy plug.
		(f) Broken wire or short in remote volume control wiring.	Trace and correct.
		(g) Speaker volume switch set too low.	Set switch as required.
		(h) Short at remote speaker connection terminal strip.	Remove short.
		(i) Short in remote speaker or remote speaker wiring.	Trace and correct.
		(j) 8 ohm remote speaker connected to CV terminal strip.	Replace with Seeburg CV type speaker.
		(k) Open or high resistance pickup coil.	Replace pickup cartridge if necessary. D.C. resistance of 246796 pickup should be approximately 1800 ohms.
		(l) Loose connection or faulty part in amplifier.	Check and repair or replace amplifier.
5. Sound fades.	Volume dies down as record plays.	See Sound System 3.	
6. Howl or squeal.	High pitched squeal.	(a) Defective tube, (especially 6BJ6)	Replace tube.
		(b) Loose connection or faulty part in amplifier.	Check and repair or replace amplifier.
(continued)	Low pitched rumble. *(continued)*	(c) Defective tube. (especially 6BJ6)	Replace tube.

SERVICE CALL	EFFECT	CAUSE	CORRECTION
(continued) 6. Howl or squeal.	*(continued)* Low pitched rumble.	(d) Chassis tie down bolts on mechanism not loosened or shipping blocks not removed.	Loosen bolts and remove shipping blocks.
		(e) Chassis tie down bolts touching edges of holes in chassis base.	Center bolts in holes.
7. Hum.	Steady hum from speakers. Sound otherwise normal.	(a) Defective tube.	Replace tube.
		(b) Defective filter condenser in amplifier.	Replace condenser.
		(c) Remote volume control cable or speaker wiring near neon tube transformer or wiring.	Re-route or shield wiring.
		(d) One side of pickup wire grounded to carriage.	Trace and repair.
		(e) Open or high resistance pickup coil.	Replace pickup cartridge if necessary. D.C. resistance of 246796 pickup should be approximately 1800 ohms.
8. Poor tone.	Music slow or wavering.	See Mechanism.	
		(a) Record not clamped fully due to burrs or dirt in flywheel hole.	Remove burrs or dirt from flywheel hold.
		(b) Badly warped record or eccentric hole in record.	Replace record.
		(c) Loose motor coupling or motor mounting.	Tighten set screws and mounting clamps.
		(d) Motor bearings or flywheel shaft bearings dry or gummed.	Clean and lubricate.
		(e) Drive grommets in flywheel loose, broken or stiff.	Replace grommets.
(continued)		(f) Excessive end play in flywheel shaft drive worm.	Adjust thrust screw for .002" end play.

SERVICE CALL	EFFECT	CAUSE	CORRECTION
(continued) 8. Poor tone.	Music distorted.	(g) Dirty, worn or chipped needles .	Clean or replace as required.
		(h) Worn or dirty records.	Replace worn records. Wipe dirt off records with clean damp cloth.
		(i) Defective tube.	Replace tube.
		(j) Open or high resistance pickup coil.	Replace pickup cartridge. Normal D.C. resistance of 246796 pickup should be approximately 1800 ohms.
		(k) Volume control defective.	Replace volume control.
		(l) Remote volume control plug or dummy plug loose, or loose connection in plug.	Seat plug firmly. Check connections in plug.
		(m) Broken wire or short in remote volume control wiring.	Trace and correct.
		(n) Short across remote speaker connection terminal lugs in amplifier.	Remove short.
		(o) Short circuit in remote speaker or remote speaker wiring.	Trace and correct.
		(p) 8 ohm remote speaker connected to amplifier.	Replace with Seeburg CV type speaker.
		(q) Speaker voice coil not centered.	Replace speaker.
		(r) Speaker cone damaged.	Replace speaker.
		(s) Pickup arm cradle pivots binding.	Adjust pivots as shown in Service Manual.
	All bass notes. No highs.	(t) Open circuit to 8" speakers.	Trace and repair.
	No bass notes. Only middle and high frequency notes heard.	(u) Open circuit to 12" speakers.	Trace and repair.

SERVICE CALL	EFFECT	CAUSE	CORRECTION
(continued) 8. Poor tone. AUTO-SPEED UNIT	Music is low in pitch on 45 rpm. records only. 33-1/3 rpm. records are normal.	(v) Power Relay in Auto Speed Unit stays in energized position due to Residual Magnetism or dirt on pole face.	Clean pole face or replace power relay in Auto-Speed Unit.
	33-1/3 rpm. records play too fast. 45 rpm records are normal.	(w) Speed Control not correctly adjusted.	Adjust Speed Control.
		(x) Mechanism Clamp Arm Switch fails to close.	Clean and adjust clamp arm switch.
		(y) Mechanism Cam Switch "P" contact fails to close.	Clean and adjust "P" contact.
		(z) Mechanism "C" contact fails to close.	Clean and adjust "C" contact.
		(aa) Open Power Relay coil.	Replace Power Relay.
9. Clicks, hum or other noises from speaker while changing records.	Noises from speaker while carriage is transferring records or scanning.	(a) Mute circuit open.	Trace circuit and repair.
		(b) Mute switches not closing.	Clean and adjust mute switches M, MA and MB as shown in Service Manual.
10. No sound from remote speakers.	Phonograph speakers normal or low volume with poor tone.	(a) Open or short circuit in remote speaker or remote speaker wiring.	Trace and correct. Check connections at amplifier terminal strip.

MONAURAL SOUND SYSTEM TROUBLE SHOOTING PROCEDURE FOR Q100 AND Q160

NOTE: This procedure must be followed carefully without bypassing steps. Each test hinges upon having conducted a previous test. Careful adherence to procedure will quickly locate any trouble.

TROUBLE: Records turn with pickup on record but no sound from any speakers.

PROCEDURE: Make several selections and make sure records turn with pickup on record for all checks and tests. Set the volume control to ¾ position. Open the back door and inspect the following:

1. Check if 5Y3GT * tube is lighted.

   IF NOT LIGHTED Replace either 2 amp fuse or 5Y3GT * tube;

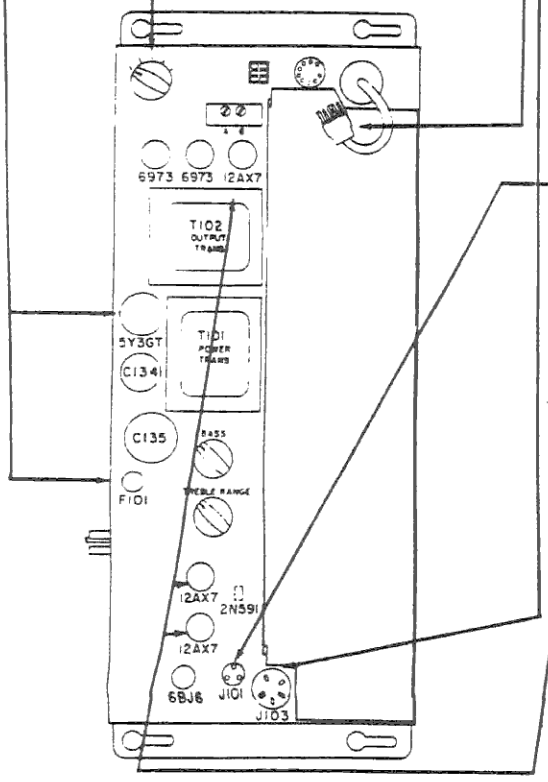
   IF LIGHTED Proceed as follows:

2. Inspect all tubes in the amplifier to see they are lighted.

3. Inspect all plugs and tubes to see they are properly seated.

4. Inspect remote speaker wires, if any, for shorts.

   IF NO TROUBLE IS FOUND Perform A test.



– A TEST –

1. Turn speaker switch to "speaker test". A loud hum should be heard.

   IF HUM IS HEARD Return switch to original setting and perform B test.

   IF NO HUM IS HEARD Check for open or short circuit to phonograph speakers.

– B TEST –

1. Remove remote volume control plug and replace dummy plug. (If remote volume is not used, perform C test.)

   IF SOUND COMES THROUGH Locate and repair short in remote volume control or cable.

   IF NO SOUND COMES THROUGH Perform C test.

– C TEST –

1. Remove mechanism mute-squelch plug from amplifier.

   IF SOUND COMES THROUGH Adjust mechanism mute switches.

   IF NO SOUND COMES THROUGH Perform D test.

– D TEST –

1. Remove the mechanism pickup plug from the amplifier.

2. Touch the end of a piece of solder or bare wire down inside the pickup socket while holding end of solder or wire. Speakers should hum loudly.

   IF HUM IS HEARD Check for open circuit from the mechanism pickup to the pickup plug.

   IF NO HUM IS HEARD Perform E test.

– E TEST –

1. Replace pickup plug into amplifier input.

2. Check each of the three 12AX7 tubes by replacing with a new tube. (Allow time for tube to warmup and be sure record is turning.)

   IF NO SOUND COMES THROUGH AFTER CHECKING TUBES Replace the amplifier.

* "SHFA2" Stereo amplifier uses one 5U4GB in place of 5Y3G1.

SERVICE CALL	EFFECT	CAUSE	CORRECTION
1. No sound from any speakers.	Removing mute-squelch plug from amplifier remedies trouble.	(a) Mute switches for both channels defective.	Adjust mute switches as shown in Service Manual.
	Removing mute-squelch plug from amplifier does not remedy trouble.	(b) Open amplifier fuse.	Replace fuse. Check for intermittent short in 5U4-GB Tube.
		(c) Defective 5U4-GB Tube	Replace tube.
		(d) Shorted power supply filter capacitor.	Repair or replace amplifier.
2. Distorted sound or low volume on one side of pickup, other side normal.		(a) Defective stylus.	Replace stylus and balance the amplifier.
		(b) Pickup cradle binding.	Locate cause of bind and repair.
		(c) One winding of pickup open.	Replace defective pickup.
3. One channel is weak or dead.	No stereo. Cannot balance the amplifier.	See Trouble Shooting Procedure Page 222.	
4. Hum.		See No. 7, Trouble Chart Page 217.	
5. Poor tone.		See No. 8, Trouble Chart Pages 217 to 219.	
6. Low volume some records.	Other records normal volume.	(a) Squelch contact on mechanism dirty.	Clean and adjust mechanism MS contact.
		(b) Defective 6BJ6 tube in each channel.	Replace both 6BJ6 tubes.

Trouble Shooting Chart – Sound 1 - 6 Q100 and Q160

STEREO SOUND SYSTEM TROUBLE SHOOTING PROCEDURE FOR SELECT-O-MATIC Q100 AND Q160

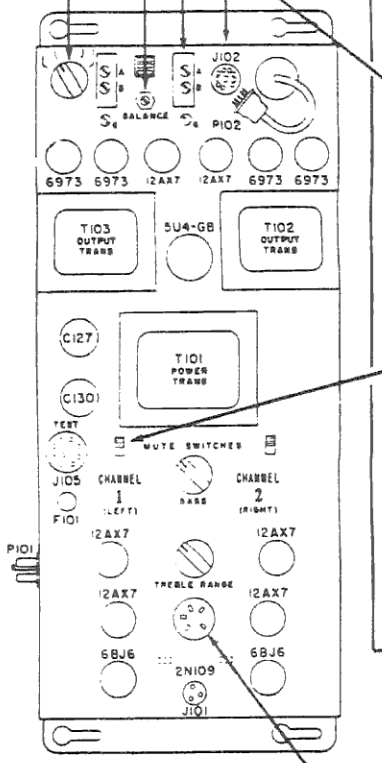
NOTE: This procedure must be followed carefully without bypassing steps. Each test hinges upon having completed a previous test. Careful adherence to procedure will quickly locate any trouble.

TROUBLE: Stereo records sound the same as monaural records. (One channel defective.)

PROCEDURE: Place the Seeburg Stereo Test Record in the phonograph magazine and select the test record side. Follow instructions on the test record.

IF BALANCE CAN BE MADE Phonograph is normal. (Be sure stereo records are in the magazine.)

IF BALANCE CANNOT BE MADE Set the balance control to mid position and perform A test.



– A TEST –

1. Turn speaker switch to "speaker test". Check that *both* speakers hum.

IF BOTH SPEAKERS HUM Return speaker test switch to the original position and perform B test. Perform C test if no RSVC-1 is used.

IF ONLY ONE SPEAKER HUMS Locate and repair defective speaker or circuit to the speaker. Return controls to original settings and balance the amplifiers using the test record.

– B TEST –

1. Remove the remote volume control plug from the amplifier and insert the local volume control plug. Set the local control to ¾ position and repeat balance test using test record.

IF BALANCE CAN BE MADE Locate and repair defect in RSVC-1.
IF BALANCE CANNOT BE MADE Set Balance control to mid position and perform C test.

– C TEST –

1. Select several *monaural* (Standard) records. With the phonograph playing, operate channel 1 mute switch, noting if the sound is muted while the switch is operated.

IF SOUND IS WEAK OR DEAD Perform D test. Perform E test if no remote speakers are used. (Channel 2 is defective)

IF SOUND CONTINUES IN CHANNEL 2 Perform H test.

– D TEST –

1. Remove one wire from channel 2 speaker terminals. With phonograph playing operate channel 1 mute switch, noting if sound is muted.

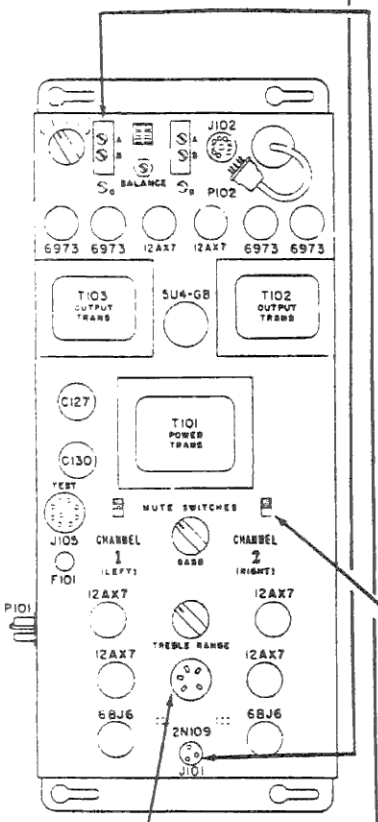
IF SOUND IS WEAK OR DEAD Replace speaker wire and perform E test.
IF SOUND CONTINUES IN CHANNEL 2 Locate and repair short in channel 2 remote speaker wiring. After repairing, balance amplifiers using test record.

– E TEST –

1. With the phonograph playing, remove the mute-squelch plug from the amplifier.
2. Operate channel 1 mute switch, noting if sound is muted.

IF SOUND IS WEAK OR DEAD Replace mute-squelch plug and perform F test.

IF SOUND CONTINUES IN CHANNEL 2 Adjust the 6 mute switches on the mechanism. After adjusting switches, replace mute-squelch plug and balance amplifiers using the test record.



– F TEST –

1. Remove the mechanism pickup plug from the amplifier.
2. Connect a short piece of solder between pins No. 1 and No. 2 of the pickup socket.
3. With the record turning, touch the solder and note that speakers hum.
4. While touching solder, operate channel 1 mute switch, noting if hum is muted.
   IF HUM IS WEAK OR DEAD Perform G test.
   IF HUM CONTINUES IN CHANNEL 2 Check for defective pickup or defective circuit between the pickup and the pickup input plug. After correcting trouble, balance the amplifiers using the test record.

– G TEST –

1. Replace mechanism pickup plug into amplifier. (Remove solder)
2. Remove a 12AX7 tube from channel 1.
3. While record is turning, substitute each of the 12AX7 tubes in channel 2 with the good 12AX7 tube removed from channel 1. Allow time for tube to warm up.
4. If the phonograph starts playing after replacing one of the 12AX7 tubes, install a new 12AX7 tube in channel 1 and balance the amplifiers, using the test record.
5. If the phonograph does not play after trying all three 12AX7 tubes turn off power, remove the 6973 tubes from channel 1 and install in channel 2. Turn on power.

   IF THE PHONOGRAPH PLAYS Install new 6973 tubes in channel 1, replace the 12AX7 tube in channel 1, and balance the amplifiers using the test record.
   IF THE PHONOGRAPH DOES NOT PLAY Replace the amplifier. Balance the new amplifier using the test record.

– H TEST –

1. With a record playing, operate channel 2 mute switch, noting if the sound is muted while the switch is operated.

   IF SOUND IS WEAK OR DEAD Perform J test. Perform K test if no remote speakers are used. (Channel 1 is defective)
   IF SOUND CONTINUES IN CHANNEL 1 Recheck previous tests made.

– J TEST –

1. Remove one wire from channel 1 speaker terminals.
2. With phonograph playing, operate channel 1 mute switch, noting if sound mutes.

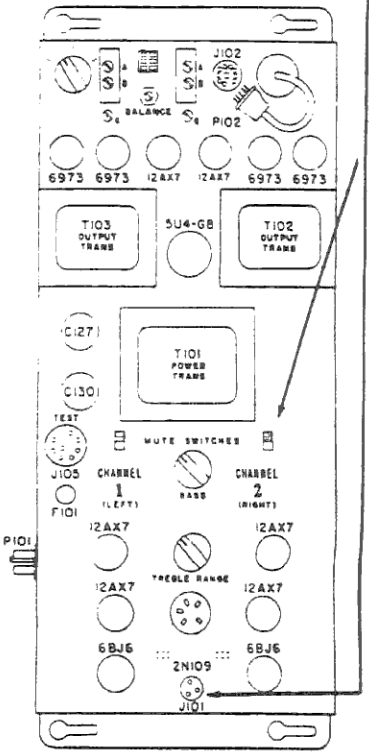
   IF SOUND IS WEAK OR DEAD Replace speaker wire and perfrom K test.
   IF SOUND CONTINUES IN CHANNEL 1 Locate and repair short in channel 1 remote speaker wires. After repairing, balance amplifiers using the test record.

– K TEST –

1. With phonograph playing, remove the mute-squelch plug from the amplifier.
2. Operate channel 2 mute switch, noting if sound is muted.

   IF SOUND IS WEAK OR DEAD Replace the mute-squelch plug. Perform L test.
   IF SOUND CONTINUES IN CHANNEL 1 Adjust the 6 mute switches on the mechanism. After adjusting switches, replace the mute-squelch plug and balance the amplifiers using the test record.

– L TEST –



1. Remove the mechanism pickup plug from the amplifier.
2. Connect a short piece of solder between pins No. 1 and No. 2 of the pickup socket.
3. With a record turning, touch the solder and note that speakers hum.
4. While touching solder, operate channel 2 mute switch, noting if hum mutes.

IF HUM IS WEAK OR DEAD Perform M test.

IF HUM CONTINUES IN CHANNEL 1 Check for defective pickup or defective circuit between the pickup and the pickup input plug. After correcting trouble, balance amplifiers using the test record.

– M TEST –

1. Replace mechanism pickup plug into amplifier. (Remove solder)
2. Remove a 12AX7 tube from channel 2.
3. While a record is turning, substitute each of the 12AX7 tubes in channel 1 with the good 12AX7 tube removed from channel 2. Allow time for warm up.
4. If the phonograph starts playing after replacing one of the 12AX7 tubes, install a new 12AX7 tube in channel 2 and balance the amplifiers using the test record.
5. If the phonograph does not play after trying all three 12AX7 tubes turn off power, remove the 6973 tubes from channel 2 and install in channel 1. Turn on power.

IF THE PHONOGRAPH PLAYS Install new 6973 tubes in channel 2, replace the 12AX7 tube in channel 2, and balance the amplifiers using the test record.

IF THE PHONOGRAPH DOES NOT PLAY Replace the amplifier. Balance the new amplifier using the test record.

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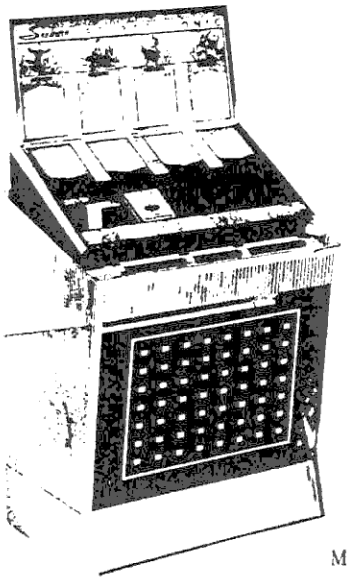
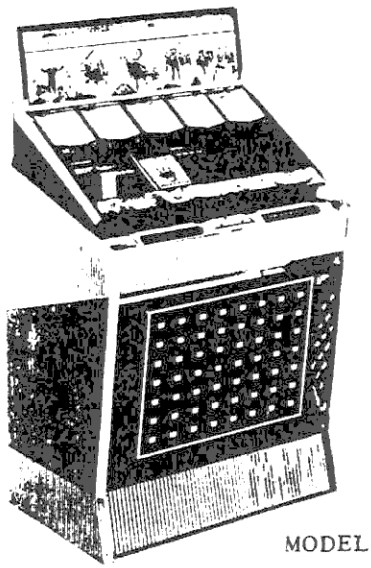


MODEL Q160



MODEL Q100

	Model Q160	Model Q100
Mechanism	Type 160ST4, Part No. 248470	Type 145ST5, Part No. 249420
Format Memory Unit	Type 160TM1, Part No. 304900	Type 100TM3, Part No. 304701
Credit Unit, Single	Type SPU1, Part No. 400450	
Single	Type SPU1H, Part No. 400454	
Half Dollar	Type HDU1, Part No. 450700	
Credit Accumulator	Type CAU1, Part No. 450800	
Stereo Amplifier	Type SHFA2, Part No. 305602	
Monaural Amplifier	Type C1HFA1, Part No. 305720	
Electrical Selector	Type TES163, Part No. 411007	Type TES104, Part No. 411012
Selection Unit	Type TSU1 (Code B), Part No. 307130	
Auto Speed Unit	Type 33-1/3 ASU1, Part No. 307400	

TUBES

with SHFA2:		with C1HFA1:	
4 - 6973	1 - 5U4G-GB	2 - 6973	1 - 5Y3-GT
7 - 12AX7	2 - 2050	4 - 12AX7	2 - 2050
2 - 6BJ6	1 - 6X4	1 - 6BJ6	1 - 6X4
2 - OA2		2 - OA2	

FUSES

1 - 5 amp. Type MTH (Selection Unit)
1 - 2 amp. Type MDL (Amplifier)
1 - 3.2 amp. Type N3-2/10 (Remote Control)
1 - 5 amp. Pigtail Type HJV (Mechanism)

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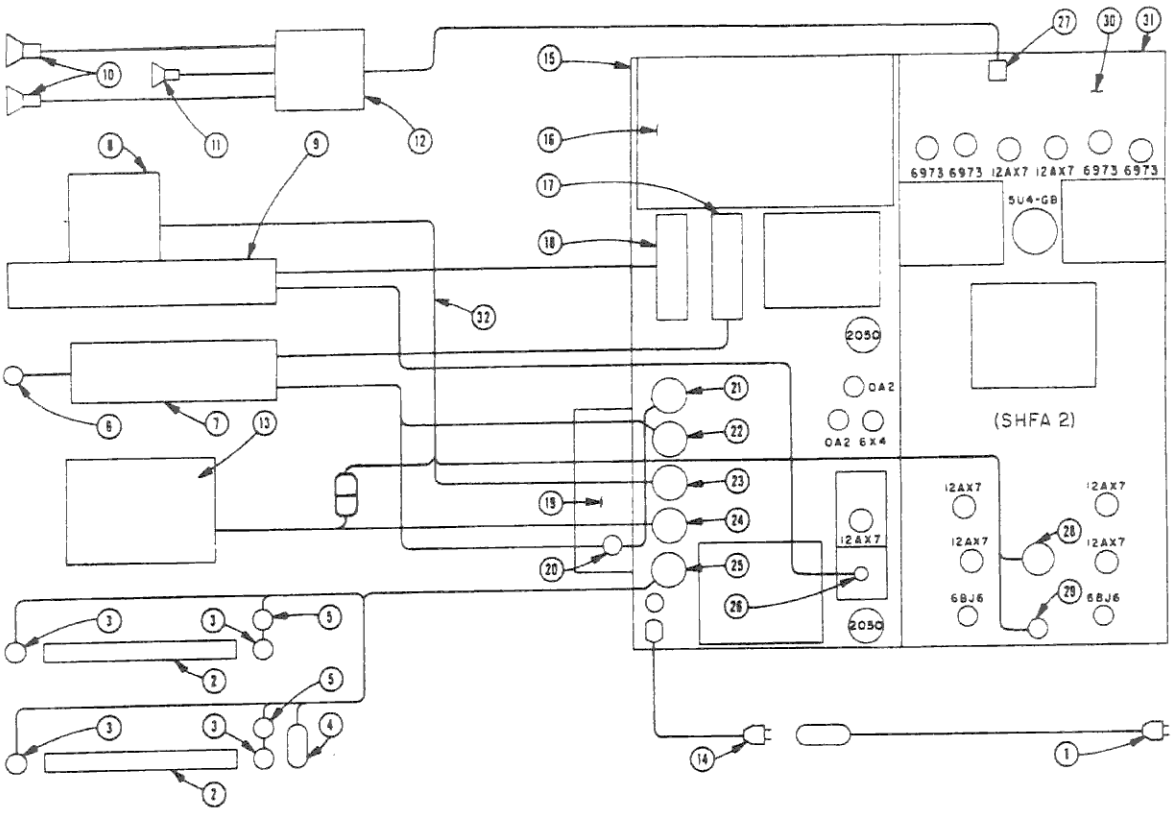
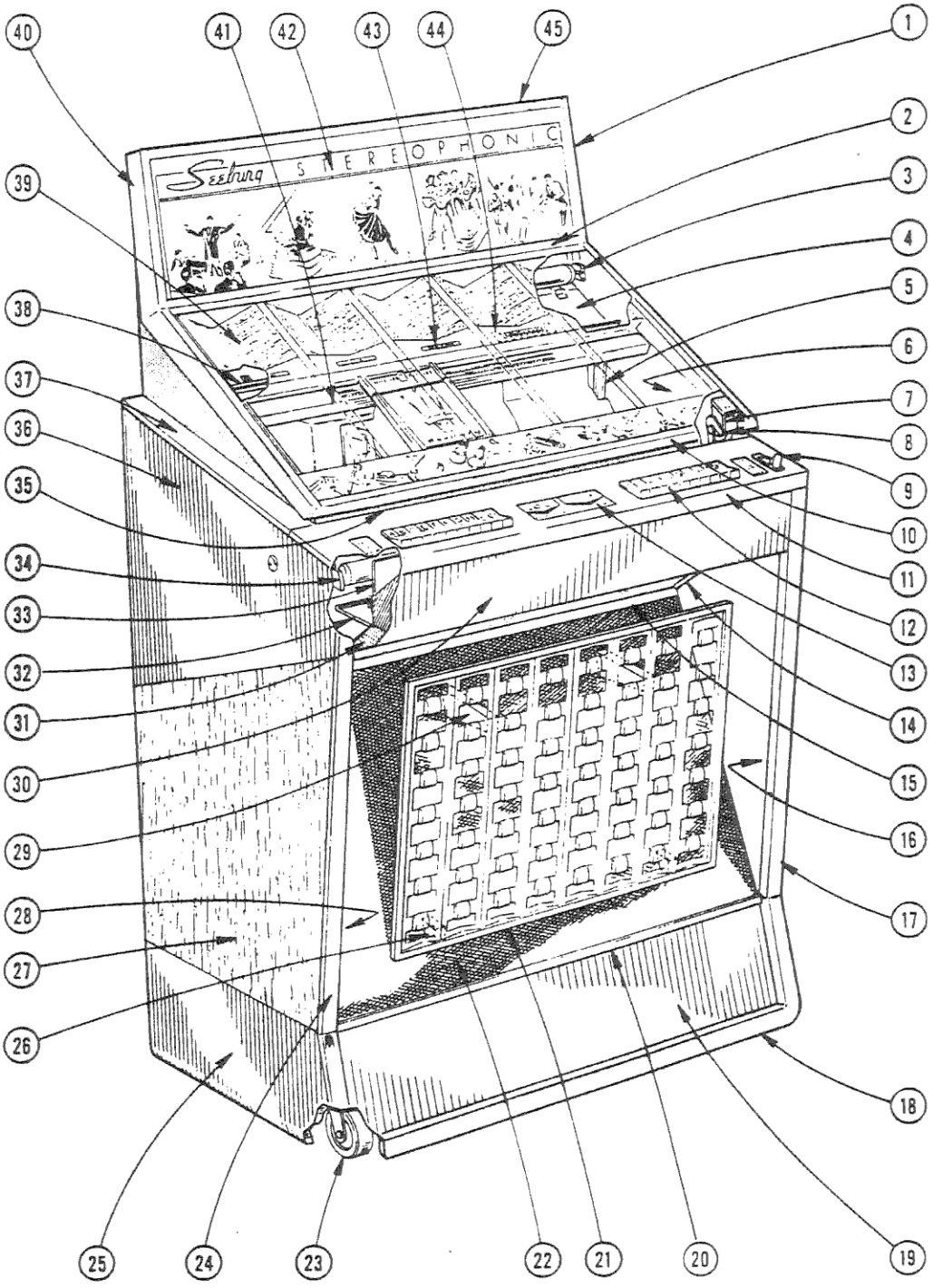


Cabinet Cabling Diagram

Item	Part No.	Description
1	402152	2-Wire Line Cord & Outlet Assem.
	503526	3-Wire Line Cord & Outlet Assem. (Accessory)
2	409084	Fluorescent Lamp
3	407352	Fluorescent Lamp Socket
4	409947	Ballast
5	407353	Starter Socket
6	411263	Credit Light Cable Assembly
7	411012	"TES 104" Tormat Electrical Selector (100)
	411007	"TES 163" Tormat Electrical Selector (160)
8	248470	"160ST4" Select-O-Matic Mechanism (160)
	249420	"145ST5" Select-O-Matic Mechanism (100)
9	304900	"160TM1" Tormat Memory Assembly (160)
	304701	"100TM3" Tormat Memory Assembly (100)
10	484411	12 Inch Speaker
11	484390	8 Inch Speaker
12	503602	"SN-2" Stereo Network
	502046	5 Lug Terminal Strip (Monaural)
13	307400	Type 33-1/3 ASU1 Auto-Speed Unit
	307418	Cable Assembly
	302426	11 Prong Socket
14	307152	Line Cord
15	307130	"TSU1" Tormat Selection Unit (Code B)
16	307030	"RCSU2" R. C. Stepper Unit
	307090	"TJU2" Tormat Junction Unit
	411201	Matrix Cable & Plug Assembly (100)
	411098	Matrix Cable & Plug Assembly (160)

Item	Part No.	Description
17	410573	33 Prong Socket
	411258	Cable Assembly (160)
	411291	Cable Assembly (100)
18	304662	33 Prong Plug
19	400450	"SPU1" Single Pricing Unit
	400454	"SPU1-H" Single Pricing Unit for ½ Dollar
	450800	"CAU1" Credit Accumulator Unit
20	411260	Control Cable Assembly
21	410708	12 Prong Plug
22	408258	7 Prong Plug
23	65323	6 Prong Plug
24	249936	11 Prong Plug
25	484388	Fluorescent Light & Cable Assem. (Lower)
	484389	Fluorescent Light & Cable Assem. (upper)
26	304732	Cable Assembly
	246957	Plug (Single Prong)
27	484437	Speaker Cable Assembly
	481205	Cap (Amp. 480084)
	941757	Contact (Amp. 42859)
28	F200241	Plug (five prong)
29	250938	Plug (three prong)
30	305641	Volume Control Assembly (Stereo)
	305752	Volume Control Assembly (Monaural)
	305634	Plug (9 Prong)
31	305602	SHFA2 Amplifier (Stereo)
	305720	C1HFA1 Amplifier (Monaural) (Not Shown)
32	249461	Control Cable
	249936	11 Prong Plug

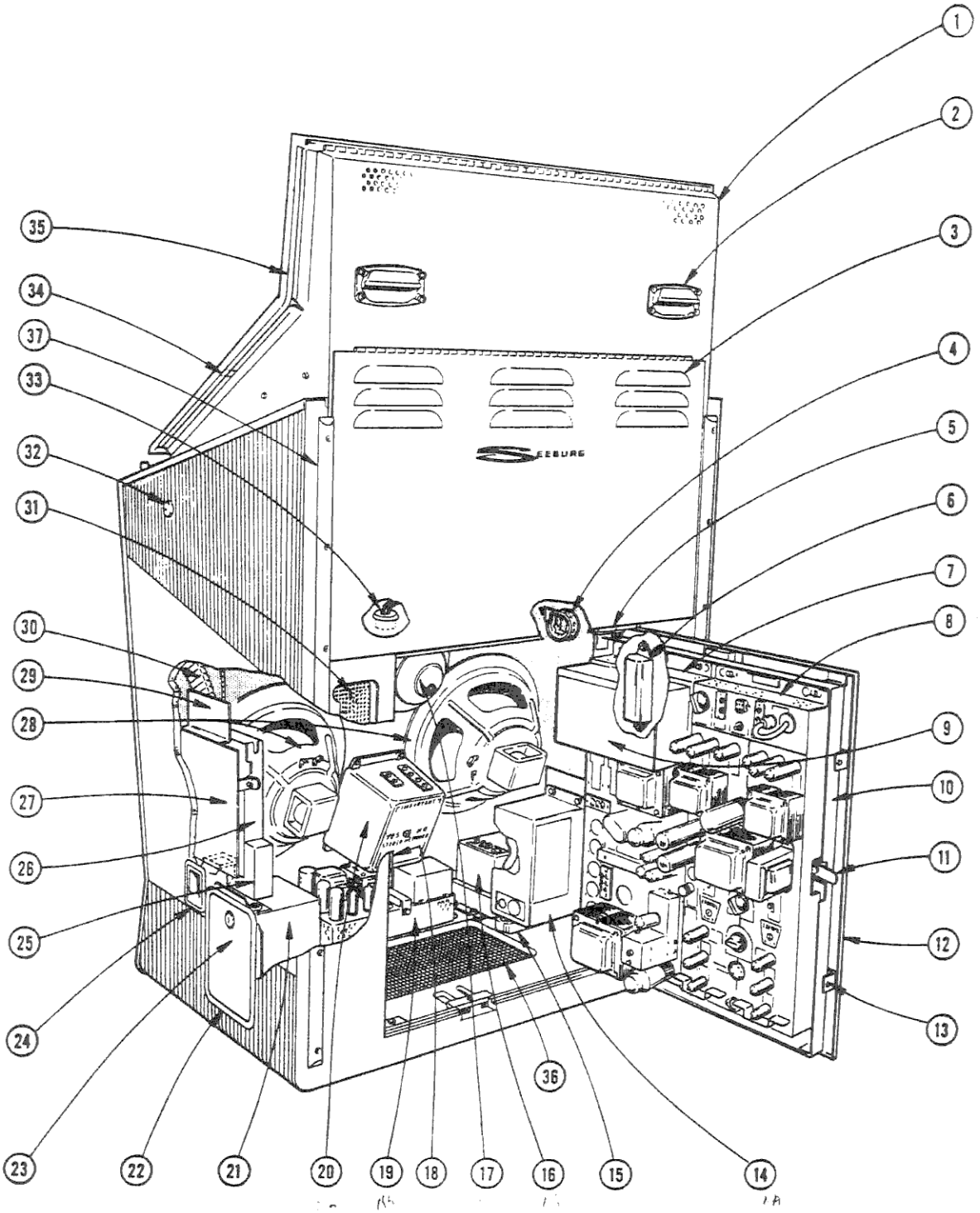


Front View Q100 Cabinet Assembly

CABINET PARTS LIST (Front View)

Item	Part No.	Description
1	483110	Cabinet Lid Frame
2	483136	Center Lid Member Assembly
	961008	8-32 x 3/8 Hex Washer Hd.Self Tap Screw
3	409084	Fluorescent Light, 25 W. 28" Cool-White
	405138	Fluorescent Light Starter, 25 W.
	484389	Fluorescent Light Cable Assembly - Upper
	911913	4-40 x ½ Phillips Pan H.M.S. (Fluorescent Light Sockets)
	960328	4 x 5/8 Phillips Pan Hd.Sheet Metal Screw (Starter Socket)
	408707	Fibre Cable Clamp
4	484335	Light Shield
	484405	Light Shield Extrusion Section
	484406	Light Shield Extrusion
5	483260	Lid Support Assembly
	961008	8-32 x 3/8 Hex Washer HD, Self Tap Screw
6	484590	Inner Cabinet Trim,R.H.
	484591	Inner Cabinet Trim, L.H.
7	484443	Lock Catch Mt. Brkt. Assem, R.H.
	484444	Lock Catch Mt. Brkt. Assem, L.H.
	961008	8-32 x 3/8 Hex Washer Hd, Self Tap. Screw
8	484593	Lid Lock Bolt
	921180	Flatwasher
	902385	10-32 Keps Nut
9	484699	Scavenger Wire & Plunger Assembly
	484701	Scavenger Housing
	918582	8-32 x 3/16 Cup Pt. Socket Hd, Set Screw
	401223	Plunger Return Spring
10	484297	Bottom Lid Member
	961008	8-32 x 3/8 Hex Washer Head, Self Tap. Screw
	914426	8-32 x 3/8 Hex Washer Head, Self Tap. Screw
11	483250	Selector Panel Assembly
	960955	8 x 5/8 Hex Washer HD, Sheet Metal Screw
•	484120	Coin Window (10¢ Play, 3/Quarter)
••	484121	Coin Window (10¢ Play, 3/Quarter, 7/Half)
*	508494	Coin Window (10¢ Play, 3/Quarter)
**	508493	Coin Window (10¢ Play, 3/Quarter, 7/Half)
	484480	Credit Window (4)
12	484328	Selector Key (set of 10) (A-K)
	483121	Selector Key (set of 10) (L-O)
• 13	483170	Pricing Window (SPU1)
••	483171	Pricing Window (SPU1-H)
*	483170	Pricing Window (CAU1)
**	483171	Pricing Window (CAU1 & HDU1)
14	484382	Grille Trim Cap
15	484592	Grille Screen Trim Angle
16	484377	Grille Side Trim Assembly, R.H.
17	484217	Grille Frame Side, R.H.
18	484218	Grille Frame Bottom
19	484355	Lower Kickplate Front
20	484738	Grille Trim Angle
	484730	Trim Retainer Angle
21	484227	Grille Ornament
	921180	Flatwasher
22	484372	Grille Screen
	484373	Scrim Cloth
	53406	Adhesive Coated Sponge Rubber
23	484349	Caster Support Bracket Assembly (Frt.L.H.)
	484350	Caster Support Bracket Assembly (Rear)
	405774	Caster Socket
	484348	Caster Support Bracket Assembly (Frt.R.H.)
	961154	No. 10 x ¾ Hex Washer HD, Sheet Metal Screw
	402588	Caster
24	484218	Grille Frame Side, L.H.
25	484334	Lower Kickplate, L.H.
	484333	Lower Kickplate, R.H.
26	484318	Grille Mounting Brkt, Lower
	484733	Gasket, Lower
	961182	10-32 x ½ Hex Washer Hd., Self Tapping Screw
	961202	10-32 x 1¼ Hex Washer Hd., Self Tapping Screw
	921527	Flatwasher
27	483198	Cabinet
	484105	Cabinet Decal
28	484380	Grille Side Trim Assembly
29	484321	Grille Mounting Bracket, Upper
	484734	Gasket, Upper
30	484351	Support Riveted Assembly
	961008	8-32 x 3/8 Hex Washer Head, Self Tapping Screw
31	484374	Upper Grille Screen
	53406	Adhesive Coated Sponge Rubber
32	484375	Diffuser
33	480678	Selector Key Diffuser
34	484388	Fluorescent Light Cable Assem. Lower
	484607	Fluorescent Light Mt.Brkt. Assem.,Lower,L.H.
	960955	8-5/8 Hex Washer Hd. Sheet Metal Screw
	911913	4-40 x ½ Phillips Pan H.M.S. (Fluorescent Lt Skts)
	960328	No. 4 x 5/8 Phillips Pan H.Sheet Metal Screw (Starter Socket)
	408707	Fibre Cable Clamp
	901501	Wing Nut (Service Switch)
	409084	25 W. Fluorescent Lt.,28" Cool-White
	405138	25 W. Fluorescent Light Starter
35	484270	Upper Panel Front
	914551	Weld Bolt
	901682	8-32 Keps Hex Nut
36	484357	Upper Cabinet Trim, L.H.
	484356	Upper Cabinet Trim, R.H.
37	484363	Top Side Trim, L.H.
	484362	Top Side Trim, R.H.
38	483137	Lower Program Member Assembly
39	483150	Program Holder Assembly (A-B)
	483151	Program Holder Assembly (C-D)
40	483111	Cabinet Lid Frame, L.H.
41	483116	Lower Cabinet Lid Glass
	483134	Cabinet Lid Assembly (Stereo Less Holder)
	483146	Cabinet Lid Assembly (Monaural Less Holder)
42	483115	Lid Glass - Upper (Stereo)
	483140	Lid Glass - Upper (High Fidelity)
43	484500	Classification Heading (Hit Tunes)
	484501	Classification Heading (Country & Western)
	484503	Classification Heading (Rhythm & Blues)
	484505	Classification Heading (Jazz)
44	484709	Classification Heading Guide
45	483112	Cabinet Lid Frame Top

•	S, S2, SR, SR2, M, M2, MR, MR2
••	SH, SH2, SHR, SHR2, MH, MH2, MHR, MHR2
*	SA, SA2, SRA, SRA2, MA, MA2, MRA, MRA2
**	SHA, SHA2, SHRA, SHRA2, MHA, MHA2, MHRA, MHRA2

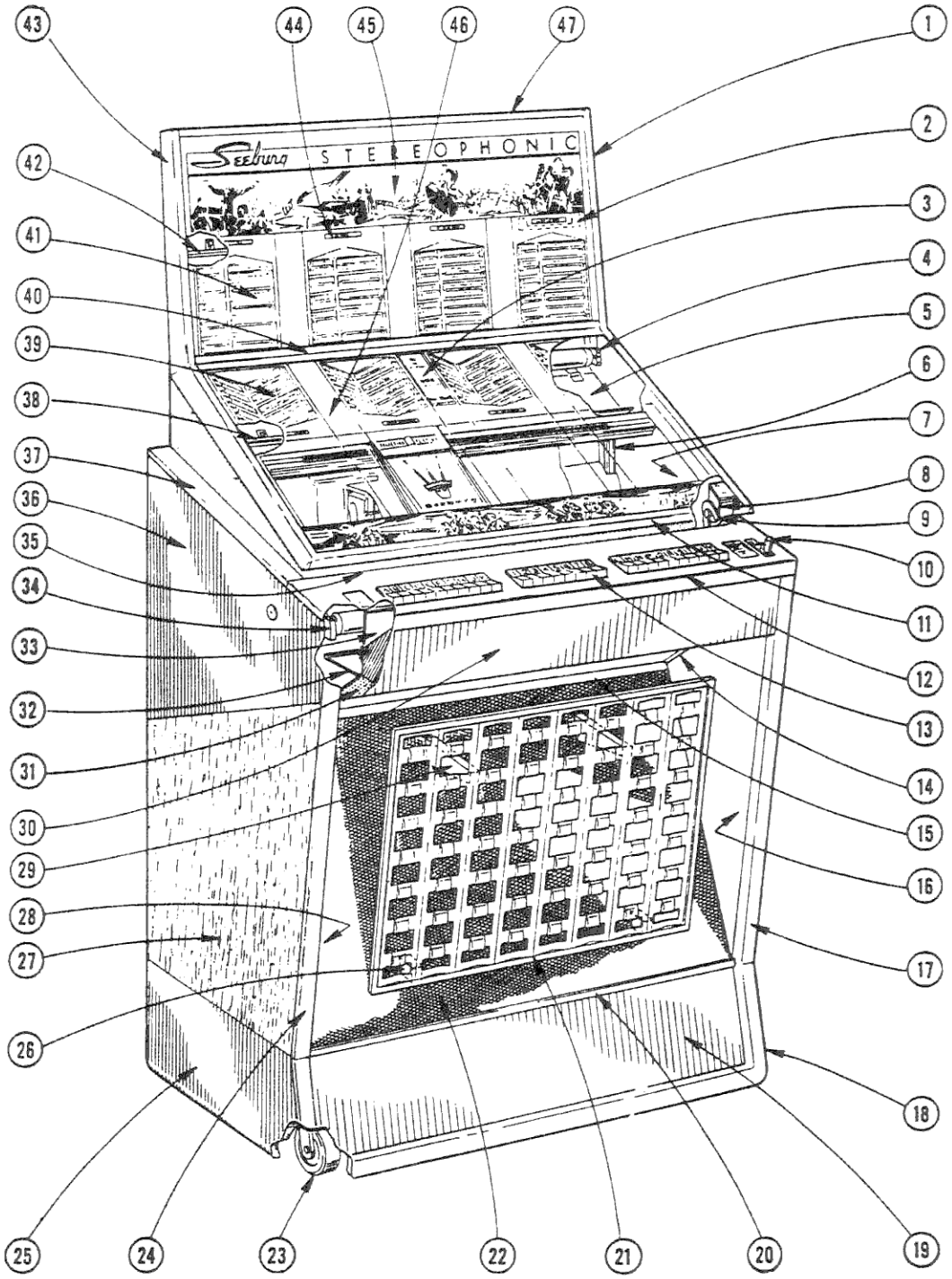


PARTS LIST on Reverse Side

Rear View - Q100 Model

CABINET PARTS LIST (Rear View)

Item	Part No.	Description
1	483131	Upper Compartment Assembly
	960955	8 x 5/8 Hex Washer Hd. Sheet Metal Screw
2	484368	Cabinet Handle
	915533	10-32 x 3/8 Sems
3	483143	Access Panel Assembly
	484407	Electronic Door Upper Seal
	53404	Adhesive Coated Sponge Rubber
4	303991	Cable Clamp
	914425	8-32 Sems
5	475018	Lower Back Door Pivot Plate
	484230	Upper Back Door Pivot Plate
	961166	10 x 1 Inch Phillips Flat Hd. Sheet Metal Screw
6	409947	Fluorescent Lamp Ballast Dual 25 W. (60 cycles)
	409945	Fluorescent Lamp Ballast Dual 25 W. (60 cycles)
	988161	Rubber Grommet
	920935	Flatwasher
	960965	8 x ¾ Hex Washer Hd. Sheet Metal Screw
7	307130	Type TSU1 Tormat Selection Unit
8	305602	Type SHFA2 Stereo Amplifier (used on "S" Model Phono)
	305720	Type C1HFA1 High Fidelity Monaural Amplifier (used on "M" Model Phono)
9	307030	Type RCSU2 Remote Control Stepper Unit (used on "R" Model Phono)
	307090	Type TJU2 Tormat Junction Unit
10	484344	Electronic Door Frame Assembly
11	481410	Door Lock Rear Assembly
12	484720	Back Cover Assembly
13	960980	8-32 x ¼ Hex Washer Hd. Self Tap Screw
14	400454	Type SPU1H Single Pricing Unit (Half Dollar) (used in "H" Model Phono)
	400450	Type SPU1 Single Pricing Unit
	450800	Type CAU1 Credit Accumulator Unit (used on "A" Model Phono)
15	402152	Line Cord & Outlet Assembly
	960686	6 x 3/4 Phillips Pan Hd. Sheet Metal Screw
	15037	Cable Clamp
	960670	6 x ½ Hex Washer Hd. Sheet Metal Screw
16	450700	Type HDU1 Half Dollar Unit (used on "H" Model Phono)
17	484474	Speaker Compartment
	484390	8 Inch Speaker - Utah
	484437	Speaker Cable & Plug Assembly
	484476	Compartment Gasket
	960955	8 x 5/8 Hex Washer Hd. Sheet Metal Screw
18	409068	Lock Plate
	960961	8 x ¾ Phillips Truss Hd. Sheet Metal Screw
19	307400	33-1/3 ASU1 Auto Speed Unit (used on "2" Model Phono)
20	503602	SN2 Network (used on "S" Model Phono)
21	483126	Cash Box Assembly
	409114	Cash Box Lock Plate
	916495	¼-20 x ¾ Carriage Bolt
	903811	¼-20 Keps Hex Nut
	404659	Cash Bag
	960955	8 x 5/8 Hex Washer Hd. Sheet Metal Screw
22	484358	Cash Box Door Frame
	960946	8 x ½ Hex Washer Hd. Sheet Metal Screw
23	484359	Cash Door Assembly
	481117	Cash Box Door
	484409	Cash Box Lock Assembly
	406094	Cash Box Reinforcing Angle
	960946	8 x ½ Hex Washer Hd. Sheet Metal Screw
24	484361	Slug Receptacle Assembly
	914636	8-32 x 5/8 Sems
	920914	Flatwasher
25	401914	Coin Switch & Cable Assembly (used in "H" Model Phono)
	401897	Coin Switch & Cable Assembly
	401905	Coin Switch Cover Assembly
	401925	Extruded Rubber Strip
26	401912	Slug Rejector
	401911	Half Slug Rejector Section (Half Dollar Unit)
	401942	Slug Rejector Mtg. Frame Assem. (Half Dollar Unit)
	401895	Slug Rejector Mtg. Frame
27	401879	Leveling Plate Riveting Assembly
	480449	Drop Slot
	480445	Drop Slot (used on "H" Model Phono)
28	484411	12 Inch Speaker, Utah
	484424	12 Inch Speaker Jensen
	920935	Flatwasher
	901682	8-32 Keps Hex Nut
29	401889	Coin Chute Mtg. Brkt. Assem.
	920914	Flatwasher
	914188	8-32 x ¼ Sems
	401892	Coin Chute Clamp Casting
	401893	Scavenger Slide
	401894	Scavenger Slide Shoulder Screw
30	484472	Coin Chute (used on "H" Model Phono)
	484471	Coin Chute
31	484271	Handhole Screen R.H.
	484272	Handhole Screen L.H.
32	484448	Lid Lock Assembly R.H.
	484449	Lid Lock Assembly L.H.
33	407251	Cable Bushing
34	484724	Clip
35	483142	Lid Gasket
36	484386	Floor Vent Screen
37	484403	Shipping Skid Rail
	960946	8 x ½ Hex Washer Hd. Sheet Metal Screw



PARTS LIST on Reverse Side

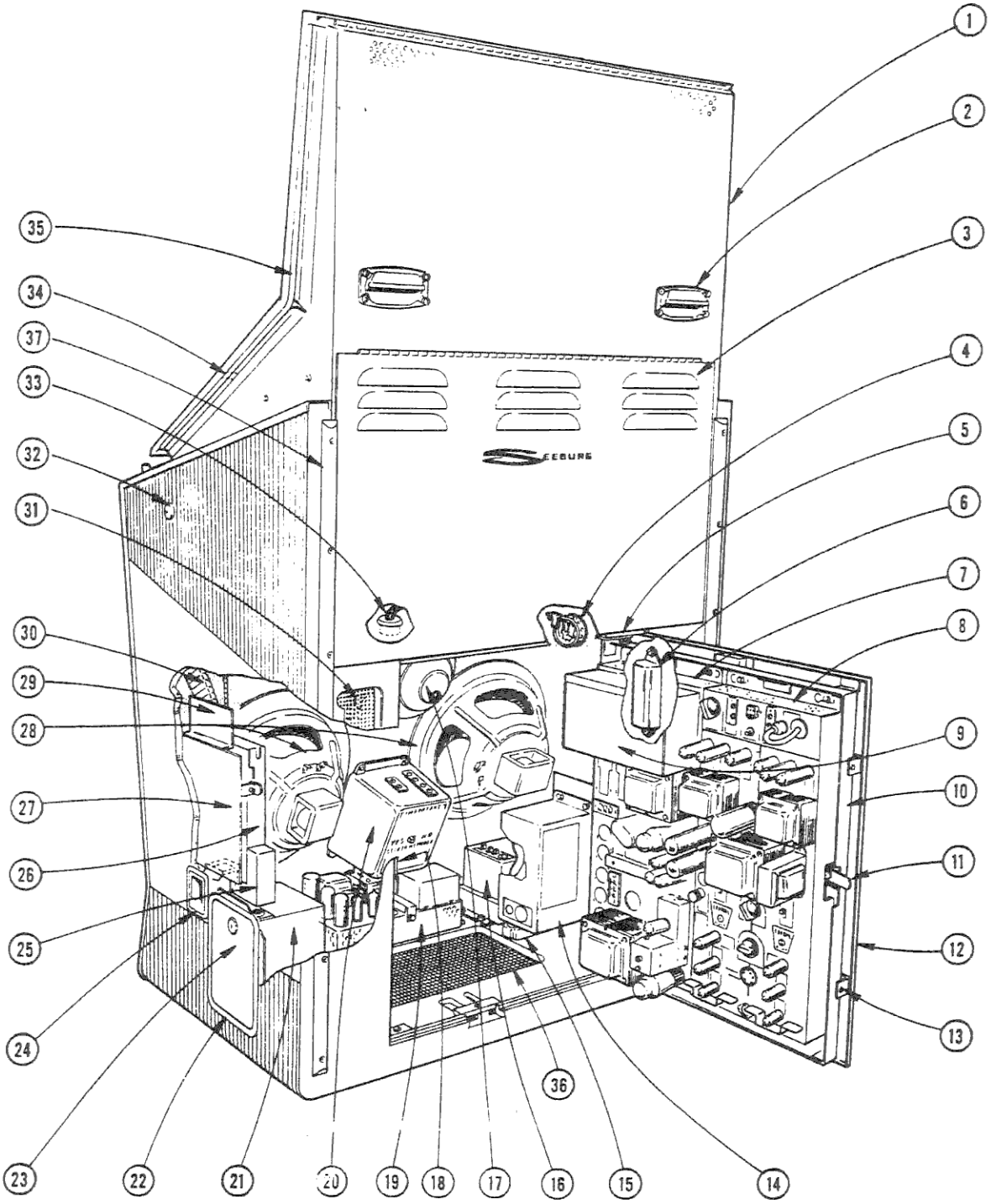
Front View - Q160 Model

CABINET PARTS LIST (Front View)

Item	Part No.	Description
1	484282	Cabinet Lid Frame, R.H.
2	484709	Classification Heading Guide
* 3	484511	Pricing Window SPU1
**	484512	Pricing Window SPU1H
◆	484511	Pricing Window CAU1
◆◆	484512	Pricing Window CAU1 & HDU1
	480389	Pricing Window Frame
	960653	6 x 3/8 Hex Washer Head. Sheet Metal Screw
4	911913	4-40 x ½ Phillips Pan HMS
		Fluorescent Light Socket
	484389	Fluorescent Light Cable Assem. Upper
	960328	4 x 5/8 Phillips Pan Hd.Sheet Metal Screw
	409084	24 W. Fluorescent Light, 28" Cool-White
	405138	25 W. Fluorescent Light Starter
	408707	Fibre Cable Clamp
5	484335	Light Shield
	484406	Light Shield Extrusion
6	484715	Lid Support Assembly
	961008	8-32 x 3/8 Hex Washer Hd. Self Tap.Screw
7	484590	Inner Cabinet Trim, R.H.
	484591	Inner Cabinet Trim, L.H.
8	484443	Lock Catch Mounting Bracket Assem. R.H.
	484444	Lock Catch Mounting Bracket Assem. L.H.
	961008	8-32 x 3/8 Hex Washer Hd., Self Tap Screw
9	484593	Lid Lock Bolt
	921180	Flatwasher
	902385	10-32 Keps Hex Nut
10	484699	Scavenger Wire & Plunger Assembly
	484701	Scavenger Housing
	918532	8-32 x 3/16 Cup Pt Socket H. Set Screw
	401223	Plunger Return Spring
11	484297	Bottom Lid Member
	961008	8-32 x 3/8 Hex Washer Hd. Self Tap Screw
	914426	8-32 x 3/8 Hex Washer H.M.S. for Lid Hinge
12	484400	Selector Panel Assembly
*	484120	Coin Window, 10¢ Play, 3 for Quarter
**	484121	Coin Window, 10¢ Play, 3 for Quarter, 7 for Half
◆	508494	Coin Window, 10¢ Play, 3 for Quarter
◆◆	508493	Coin Window, 10¢ Play, 3 for Quarter, 7 for Half
	484480	Credit Window,Make Any Selection (4)
	960955	8 x 5/8 Hex Washer Hd. Sheet Metal Screw
13	484328	Selector Key (set of 10) (A-K)
	484327	Selector Key (set of 10) (L-V)
	484326	Selector Key (set of 8)
14	484382	Grille Trim Cap
15	484592	Grille Screen Trim Angle
16	484377	Grille Side Trim Assembly,R.H.
17	484217	Grille Frame Side, R.H.
18	484212	Grille Frame Bottom
	484288	Grille Frame Support Bracket
19	484355	Lower Kickplate, Front
20	484730	Trim Retainer Angle
	484738	Grille Trim Angle
21	484227	Grille Ornament
	961008	8-32 x 3/8 Hex Washer Hd. Self Tap Screw
	921180	Flatwasher
22	484372	Grille Screen
	484373	Scrim Cloth
	53406	Adhesive Coated Sponge Rubber
23	484350	Caster Support Bracket Assem. Rear
	405774	Caster Socket
	484348	Caster Support Bracket Assem. Front,R.H.
	484349	Caster Support Bracket Assem. Front,L.H.

Item	Part No.	Description
	961154	10 x ¾ Hex Washer Hd. Sheet Metal Screw
24	484218	Grille Frame Side, L.H.
25	484334	Lower Kickplate, L.H.
	484333	Lower Kickplate, R.H.
26	484318	Grille Mounting Bracket, Lower
	484733	Gasket, Lower
	961182	10-32 x ½ Hex Washer Hd. Self Tap Screw
	961202	10-32 x ¼ Hex Washer Hd. Self Tap Screw
	921527	Flatwasher
27	484200	Cabinet
	484105	Blond Sliced Cherry "W" Decal
28	484380	Grille Side Trim Assembly, R. H.
29	484321	Grille Mounting Bracket, Upper
30	484351	Support Riveted Assembly
	961008	8-32 x 3/8 Self Tap Screw
31	484374	Upper Grille Screen
	53406	Adhesive Coated Sponge Rubber
32	484375	Diffuser
33	480678	Selector Key Diffuser
34	960955	8 x 5/8 Hex Washer Hd. Sheet Metal Screw
	484388	Fluorescent Light Cable Assembly, Lower
	911913	4-40 x ½ Phillips Pan H.M.S.
		Fluorescent Light Socket
	960328	4 x 5/8 Phillips Pan Hd. Sheet Metal Screw
		Starter Socket
	408707	Fibre Cable Clamp
	484607	Fluorescent Light Mtg. Brkt. Lower, R.H.
	901501	Wing Nut- Service Switch
	484385	Fluorescent Light Mtg. Brkt. Assembly,
		Lower, R. H.
	409084	25 W. Fluorescent Light, 28" Cool-White
	405138	25 W. Fluorescent Light Starter
35	484270	Upper Panel Front
	901682	8-32 Keps Hex Nut
36	484357	Upper Cabinet Trim, L.H.
	484356	Upper Cabinet Trim, R.H.
37	484363	Topside Trim, L.H.
	484362	Topside Trim, R.H.
38	484441	Lower Program Member Assembly
39	484241	Program Holder Assembly (1 - 1)
	484242	Program Holder Assembly (2 - 2)
	484243	Program Holder Assembly (3 - 3)
	484244	Program Holder Assembly (4 - 4)
40	484465	Center Lid Member Assembly
	484332	Spacer Upper
	961008	8-32 x 3/8 Hex Washer Hd. Self Tap Screw
	484331	Lower Spacer
	961008	8-32 x 3/8 Hex Washer Hd. Self Tap Screw
41	484233	Program Holder Assembly (5 - 5)
	484234	Program Holder Assembly (6 - 6)
42	484440	Upper Program Member Assembly
43	484283	Cabinet Lid Frame, L.H.
44	484500	Classification Heading (Hit Tunes)
	484503	Classification Heading (Rhythm & Blues)
	484501	Classification Heading (Country & Western)
	484505	Classification Heading (Jazz)
	484502	Classification Heading (All Time Favorites)
45	484303	Lid Glass Upper (Stereo)
	484470	Lid Glass Upper (High Fidelity)
	484852	Lid Glass Cushion
46	484438	Cabinet Lid Assem. (Stereo, less holders)
	484436	Cabinet Lid Assem. (Monaural, less holders)
	484304	Lower Cabinet Lid Glass
47	484293	Cabinet Lid Frame Top

* S, S2, SR, SR2, M, M2, MR, MR2
** SH, SH2, SHR, SHR2, MH, MH2, MHR, MHR2
◆ SA, SA2, SRA, SRA2, MA, MA2, MRA, MRA2
◆◆ SHA, SHA2, SHRA, SHRA2, MHA, MHA2, MHRA, MHRA2



Back View - Q160 Model

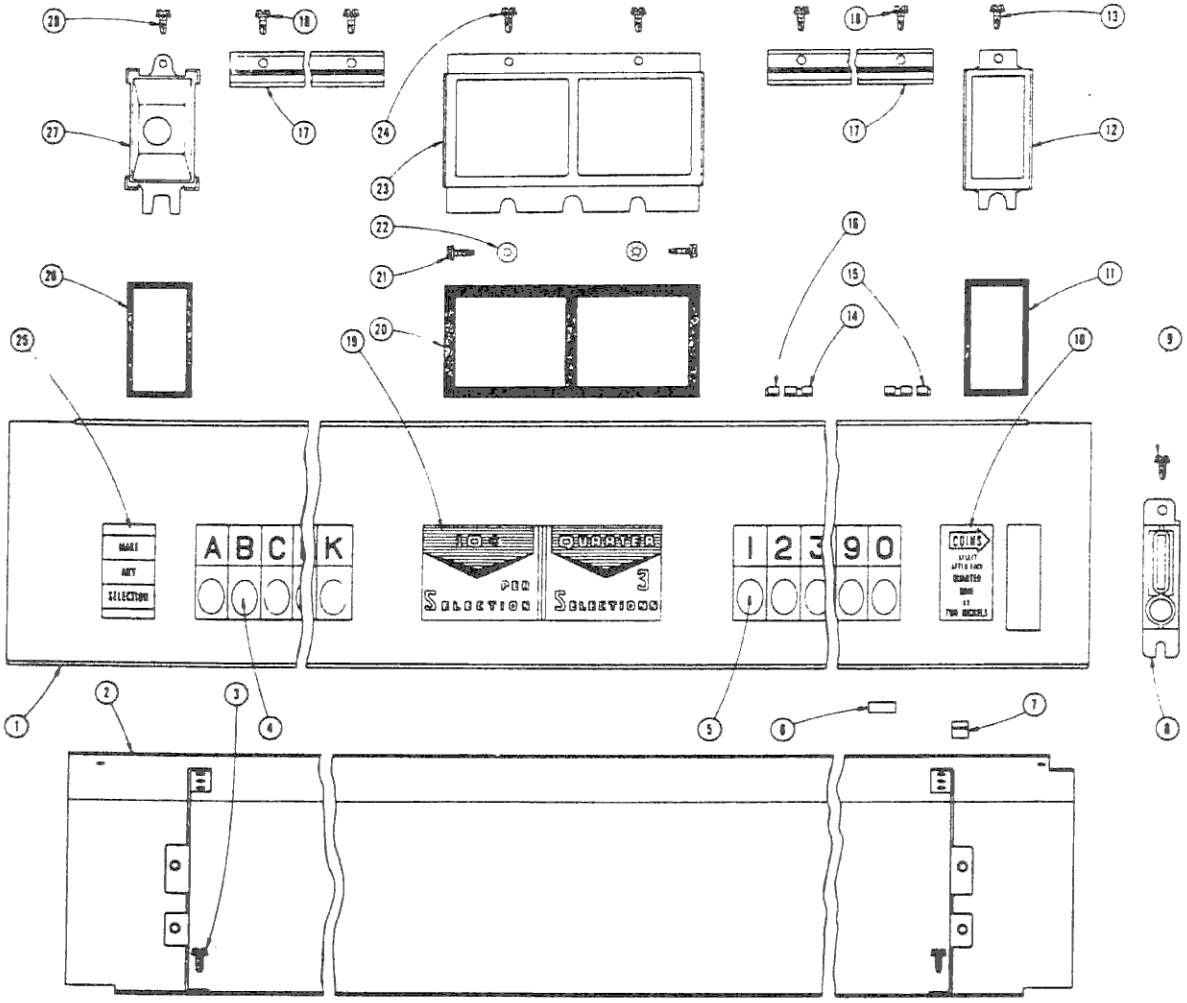
PARTS LIST on Reverse Side

CABINET PARTS LIST (Rear View)

Item	Part No.	Description
1	484365	Upper Compartment Assembly
	960955	8 x 5/8 Hex Washer Hd. Sheet Metal Screw
	484723	Reflector
2	484368	Cabinet Handle
	915533	10-32 x 3/8 Sems
3	484456	Access Panel Assembly
	484407	Electronic Door Upper Seal
	53404	Adhesive Coated Sponge Rubber
4	303991	Cable Clamp
	914425	8-32 x 3/8 Sems
5	475018	Lower Back Door Pivot Plate
	484230	Upper Back Door Pivot Plate
	961166	10 x 1 Inch Phillips Flat Hd. Sheet Metal Screw
6	409947	Fluorescent Lamp Ballast Dual, 25 W.
	409945	Fluorescent Lamp Ballast Dual, 25 W.
	988161	Rubber Grommet
	920935	Flatwasher
	960965	8 x ¾ Hex Washer Hd. Sheet Metal Screw
7	307130	Type TSU1, Tormat Selection Unit
8	305602	Type SHFA2 Stereo Amplifier (used on "S" Model Phono)
	305720	Type C1HFA1 Hi-Fi Monaural Amplifier (used on "M" Model Phono)
9	307030	Type RCSU2, Remote Control Stepper Unit (used on "R" Model Phono)
	307090	Type TJU2, Tormat Junction Unit
	913234	6-32 x 3/8 Sems
	914425	8-32 x 3/8 Sems
10	484344	Electronic Door Frame Assembly
11	481410	Door Lock Rear Assembly
12	484720	Back Cover Assembly
13	960980	8-32 x ¼ Hex Washer Hd. Self Tap Screw
14	400454	Type SPU1H Single Pricing Unit (Half Dollar) (used on "H" Model Phono)
	400450	Type SPU1 Single Pricing Unit
	450800	Type CAU1 Credit Accumulator Unit (used on "A" Model Phono)
15	402152	Line Cord & Outlet Assembly
	960686	6 x ¾ Phillips Pan Hd. Sheet Metal Screw
	53116	½ Inch Masking Tape - Black
	15037	Cable Clamp
	960670	6 x ½ Hex Washer Hd. Sheet Metal Screw
16	450700	Type HDU1, Half Dollar Unit (used on "H" Model Phono)
17	484474	Speaker Compartment
	484390	8 Inch Speaker - Utah
	484437	Speaker Cable & Plug Assembly
	484476	Compartment Gasket
	960955	8 x 5/8 Hex Washer Hd. Sheet Metal Screw
	407301	Amp Plug
	407302	Faston Receptacle
	408265	Spade Lug
	481205	Cap (Amp. C-480084)
	941757	Contact
	960674	6-32 x ½ Sems
	484475	Speaker & Cable Assembly
	484731	8 Inch Speaker Insulation
18	409068	Lock Plate

Item	Part No.	Description
	960961	8 x ¾ Phillips Truss Hd. Sheet Metal Screw
19	307400	33-1/3 ASU1, Auto Speed Unit (used on "2" Model Phono)
20	503602	SN2 Network (used on "S" Model Phono)
21	483126	Cash Box Assembly
	409114	Cash Box Lock Plate
	916495	¼-20 x ¾ Carriage Bolt
	903811	¼-20 Keps Hex Nut
	404659	Cash Bag
	960955	8 x 5/8 Hex Washer Hd. Sheet Metal Screw
22	484358	Cash Box Door Frame
	960946	8 x ½ Hex Washer Hd. Sheet Metal Screw
23	484359	Cash Door Assembly
	481117	Cash Box Door
	484409	Cash Box Lock Assembly
	406094	Cash Box Reinforcing Angle
	960946	8 x ½ Hex Washer Hd. Sheet Metal Screw
24	484361	Slug Receptacle Assembly
	914636	8-32 x 5/8 Sems
	920914	Flatwasher
	401897	Coin Switch & Cable Assembly
25	401914	Coin Switch & Cable Assembly (used on "H" Model Phono)
	401905	Coin Switch Cover Assembly
	401925	Extruded Rubber Strip
	480449	Drop Slot
	480445	Drop Slot (Used on "H" Model Phono)
26	401912	Slug Rejector
	401911	Half Slug Rejector Section (used on "H" Model Phono)
	401942	Slug Rejector Mtg. Frame Assembly (used on "H" Model Phono)
	401895	Slug Rejector Mtg. Frame
27	401879	Leveling Plate Riveted Assembly
28	484411	12 Inch Speaker
	484424	12 Inch Speaker
	920935	Flatwasher
	901682	8-32 Keps Hex Nut
29	401889	Coin Chute Mtg. Brkt. Welded Assembly
	920914	Flatwasher
	914188	8-32 x ¼ Sems
	401892	Coin Chute Clamp Casting
	401893	Scavenger Slide
	401894	Scavenger Slide Shoulder Screw
30	484471	Coin Chute
	484472	Coin Chute (used on "H" Model Phono)
31	484271	Handhole Screen R. H.
	484272	Handhole Screen L.H.
32	484595	Lid Lock Pivot Stud
	484449	Lid Lock Assembly L.H.
	484448	Lid Lock Assembly R.H.
33	407251	Cable Bushing
34	484724	Clip
35	484589	Lid Gasket
36	484386	Floor Vent Screen
37	484403	Shipping Skid Rail
	960946	8 x ½ Hex Washer Hd. Sheet Metal Screw

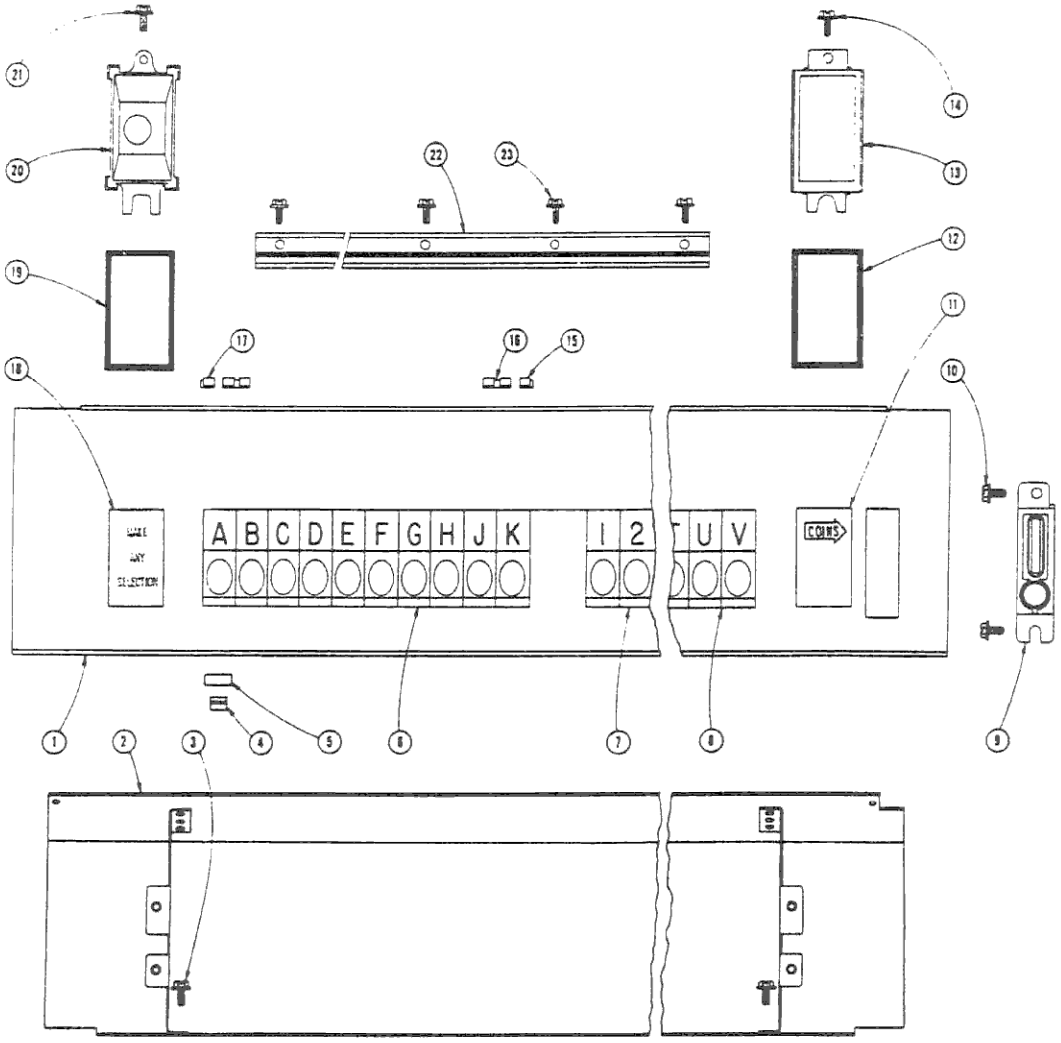
SELECT-O-MATIC Q100 MODEL



Item	Part No.	Description
1	483102	Selector Panel
2	484351	Support Riveted Assembly
3	961008	8-32 x 3/8 Hex Washer Hd. Self Tp. Screw
4	484328	Selector Key (Set of 10) (A - K)
5	483121	Selector Key (Set of 10) (1 - 0)
6	410226	Selector Key Stop
7	410225	Spring Clip (Key)
8	480445	Drop Slot (Half Dollar)
	480449	Drop Slot (Quarter)
9	961008	8-32 x 3/8 Hex Washer Hd. Self Tp. Screw
* 10	484120	Coin Window, 10¢ Play, 3/Quarter
**	484121	Coin Window, 10¢ Play, 3/Quarter, 7 for Half
◆	508494	Coin Window, 10¢ Play, 3/Quarter,
◆◆	508493	Coin Window, 10¢ Play, 3/Quarter, 7 for Half
11	53401	Adhesive Coated Sponge Rubber
12	484287	Coin Window Bracket
13	961008	8-32 x 3/8 Hex Washer Hd. Self Tp. Screw
14	410336	Selector Key Spring
15	410337	Selector Key Spring R. H.

Item	Part No.	Description
16	410338	Selector Key Spring, L.H.
17	481109	Selector Key Bearing Strip
18	961008	8-32 x 3/8 Hex Washer Hd. Self Tp. Screw
19	483170	Pricing Window (SPU1 set for Dime Play, CAU1)
	483171	Pricing Window (SPU1-H, CAU1 & HDU1)
	483172	Pricing Window (SPU1 set for Nickel Play, CAU5)
	483173	Pricing Window (SPU1 set for Nickel Play, & HDU1 or SPU1-H set for Nickel Play & HDU1)
	483174	Pricing Window (SPU1 set for Dime Play, 4/Quarter)
	483175	Pricing Window (SPU1-H set for Dime Play, 4/Quarter)
20	53403	Adhesive Coated Sponge Rubber
21	961025	8-32 x ½ Hex Washer Hd. Self Tp. Screw
22	481112	Spacer
23	481080	Pricing Window Retainer
24	961008	8-32 x 3/8 Hex Washer Hd. Self Tp. Screw
25	484480	Credit Window
26	53401	Adhesive Coated Sponge Rubber
27	484286	Credit Window Box
28	961008	8-32 x 3/8 Hex Washer Hd. Self Tp .Screw

* S, S2, SR, SR2, M, M2, MR, MR2
** SH, SH2, SHR, SHR2, MH, MH2, MHR, MHR2
◆ SA, SA2, SRA, SRA2, MA, MA2, MRA, MRA2
◆◆ SHA, SHA2, SHRA, SHRA2, MHA, MHA2, MHRA, MHRA2



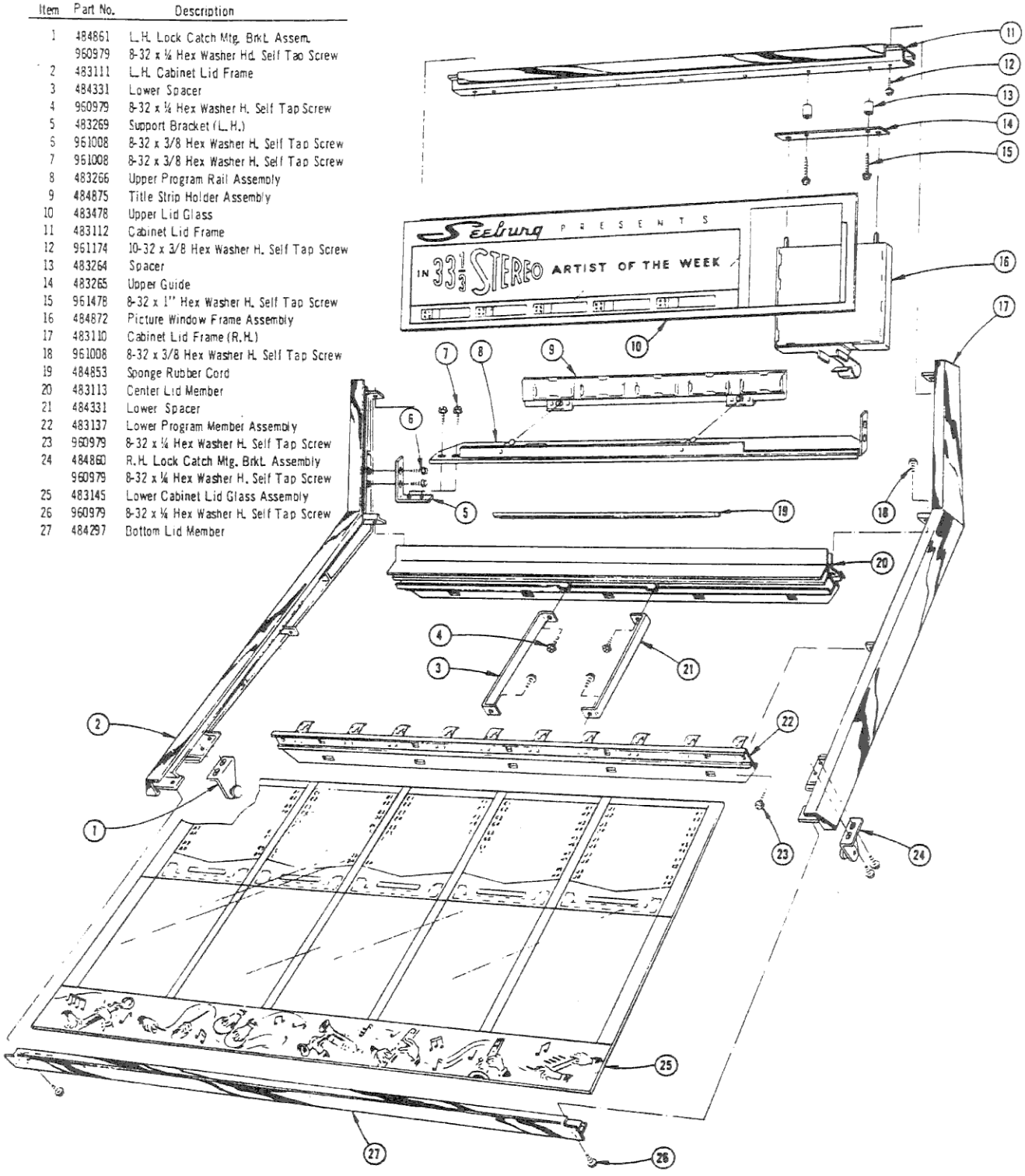
Selector Key Panel Assembly

PARTS LIST

Item	Part No.	Description
1	484224	Selector Panel
2	484351	Support Riveted Assembly
3	961008	8-32 x 3/8 Hex Washer Hd. Self Tp. Screw
4	410225	Spring Clip (Key)
5	410226	Selector Key Stop
6	484328	Selector Key (Set of 10) (A - K)
7	484326	Selector Key (Set of 8)
8	484327	Selector Key (Set of 10) (L - V)
9	480445	Drop Slot, Half Dollar
	480449	Drop Slot, Quarter
10	961008	8-32 x 3/8 Hex Washer Hd. Self Tp. Screw
* 11	484120	Coin Window, 10¢ Play, 3/Quarter
**	484121	Coin Window, 10¢ Play, 3/Quarter, 7 for Half
◆	508494	Coin Window, 10¢ Play, 3/Quarter
◆◆	508493	Coin Window, 10¢ Play, 3/Quarter, 7 for Half
12	53401	Adhesive Coated Sponge Rubber
13	484287	Coin Window Bracket
14	961008	8-32 x 3/8 Hex Washer Hd. Self Tp. Screw
15	410337	Selector Key Spring, R.H.
16	410336	Selector Key Spring
17	410338	Selector Key Spring, L.H.
18	484480	Credit Window
†	508557	Credit Window
19	53401	Adhesive Coated Sponge Rubber
20	484286	Credit Window Box
21	961008	8-32 x 3/8 Hex Washer Hd. Self Tp. Screw
22	480138	Selector Key Bearing Strip
23	961008	8-32 x 3/8 Hex Washer Hd. Self Tp. Screw

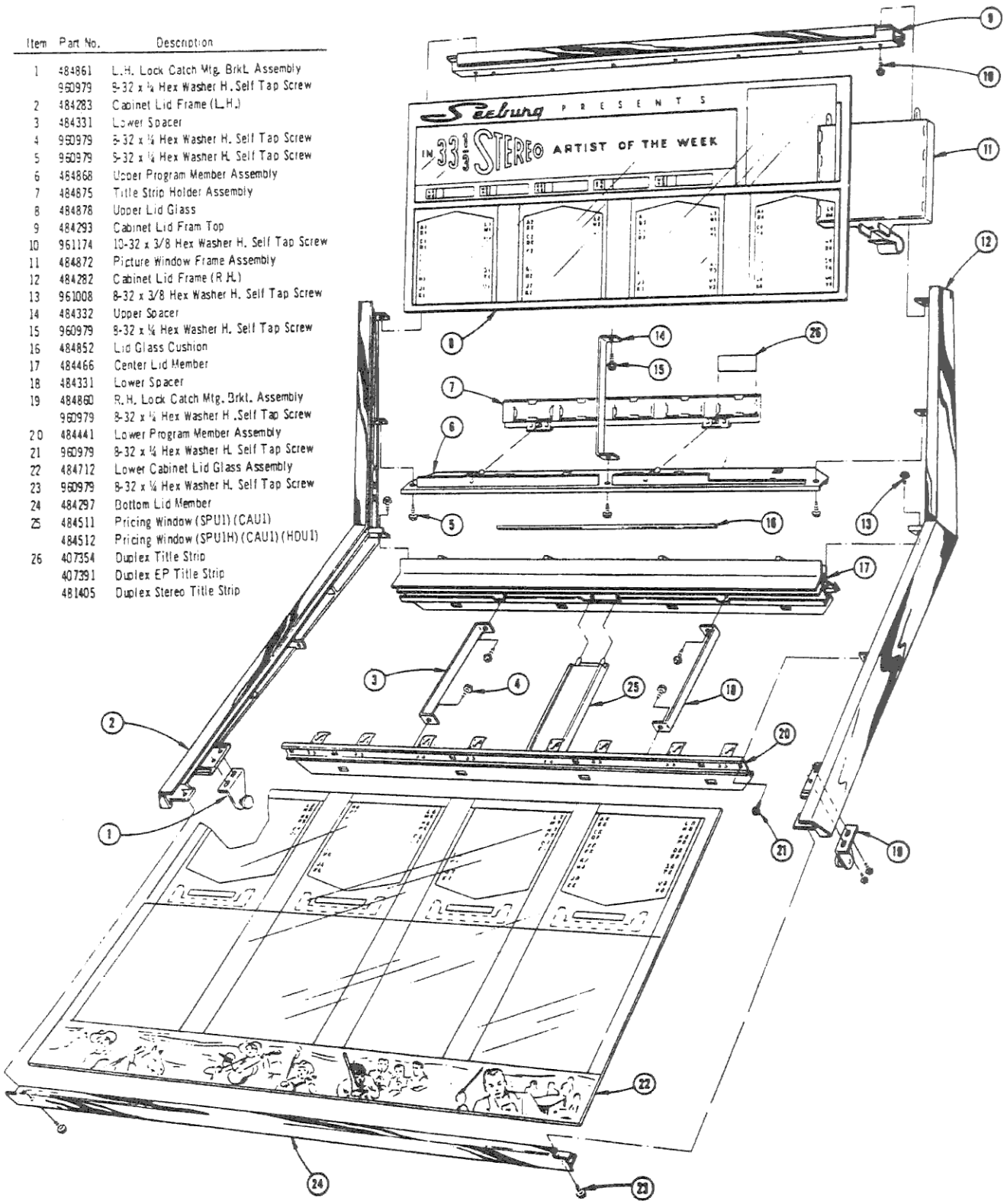
* S, S2, SR, SR2, M, M2, MR, MR2
** SH, SH2, SHR, SHR2, MH, MH2, MHR, MHR2
◆ SA, SA2, SRA, SRA2, MA, MA2, MRA, MRA2, SD, SD2, SRD, SRD2, MD, MD2, MRD & MRD2.
◆◆ SHA, SHA2, SHRA, SHRA2, MHA, MHA2, MHRA, MHRA2, SHD, SHD2, SHRD, SHRD2, MHD, MHD2, MHRD, MHRD2.
† SD, SD2, SRD, SRD2, MD, MD2, MRD, MRD2, SHD, SHD2, SHRD, SHRD2, MHD, MHD2, MHRD & MHRD2.

Item	Part No.	Description
1	484861	L.H. Lock Catch Mtg. Brkt. Assem.
	960979	8-32 x ½ Hex Washer Hd. Self Tap Screw
2	483111	L.H. Cabinet Lid Frame
3	484331	Lower Spacer
4	960979	8-32 x ½ Hex Washer H. Self Tap Screw
5	483269	Support Bracket (L.H.)
6	961008	8-32 x 3/8 Hex Washer H. Self Tap Screw
7	961008	8-32 x 3/8 Hex Washer H. Self Tap Screw
8	483266	Upper Program Rail Assembly
9	484875	Title Strip Holder Assembly
10	483478	Upper Lid Glass
11	483112	Cabinet Lid Frame
12	961174	10-32 x 3/8 Hex Washer H. Self Tap Screw
13	483264	Spacer
14	483265	Upper Guide
15	961478	8-32 x 1" Hex Washer H. Self Tap Screw
16	484872	Picture Window Frame Assembly
17	483110	Cabinet Lid Frame (R.H.)
18	961008	8-32 x 3/8 Hex Washer H. Self Tap Screw
19	484853	Sponge Rubber Cord
20	483113	Center Lid Member
21	484331	Lower Spacer
22	483137	Lower Program Member Assembly
23	960979	8-32 x ½ Hex Washer H. Self Tap Screw
24	484860	R.H. Lock Catch Mtg. Brkt. Assembly
	960979	8-32 x ¼ Hex Washer H. Self Tap Screw
25	483145	Lower Cabinet Lid Glass Assembly
26	960979	8-32 x ¼ Hex Washer H. Self Tap Screw
27	484297	Bottom Lid Member



"Artist of The Week" Lid Assembly for Q100 Models.

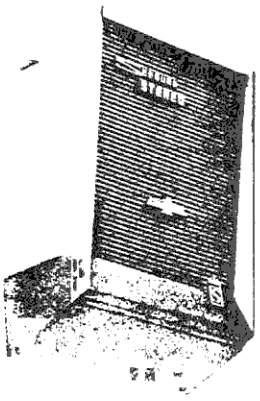
Item	Part No.	Description
1	484861	L.H. Lock Catch Mtg. Brkt. Assembly
	960979	8-32 x ¼ Hex Washer H. Self Tap Screw
2	484283	Cabinet Lid Frame (L.H.)
3	484331	Lower Spacer
4	960979	8-32 x ¼ Hex Washer H. Self Tap Screw
5	960979	8-32 x ¼ Hex Washer H. Self Tap Screw
6	484868	Upper Program Member Assembly
7	484875	Title Strip Holder Assembly
8	484878	Upper Lid Glass
9	484293	Cabinet Lid Fram Top
10	961174	10-32 x 3/8 Hex Washer H. Self Tap Screw
11	484872	Picture Window Frame Assembly
12	484282	Cabinet Lid Frame (R.H.)
13	961008	8-32 x 3/8 Hex Washer H. Self Tap Screw
14	484332	Upper Spacer
15	960979	8-32 x ¼ Hex Washer H. Self Tap Screw
16	484852	Lid Glass Cushion
17	484466	Center Lid Member
18	484331	Lower Spacer
19	484860	R.H. Lock Catch Mtg. Brkt. Assembly
	960979	8-32 x ¼ Hex Washer H. Self Tap Screw
20	484441	Lower Program Member Assembly
21	960979	8-32 x ¼ Hex Washer H. Self Tap Screw
22	484712	Lower Cabinet Lid Glass Assembly
23	960979	8-32 x ¼ Hex Washer H. Self Tap Screw
24	484797	Bottom Lid Member
25	484511	Pricing Window (SPU1) (CAU1)
	484512	Pricing Window (SPU1H) (CAU1) (HDU1)
26	407354	Duplex Title Strip
	407391	Duplex EP Title Strip
	481405	Duplex Stereo Title Strip



"Artist of The Week" Lid Assembly for Q160 Models.

SEEBURG

SEEBURG TWIN STEREOPHONIC SPEAKERS
Type TW1-8C1, TW1-8C2, TC1-8C1 and TC1-8C2



SPECIFICATIONS

Size ..... 8 inch.
Type ..... Constant Voltage, 70-Volt line
Power Rating.....16 watts (each) (Taps at 16, 8, 4 and 1 watts)
Net Weight..... 17 Pounds (2 speakers)
Shipping Weight ..... 22 Pounds (2 speakers)

The Seeburg Twin Stereophonic Speakers are specifically designed to be used in pairs. Each speaker carries its own channel indentification. The TW1-8C1 and TW1-8C2 speakers illustrated above are intended for wall installation. The TC1-8C1 and TC1-8C2 are for corner mounting. The wall type TW1-8C1 and TW1-8C2 may be converted for corner mounting with the Type "CA1" Corner Adapter.

INSTALLATION

Locate the speaker mounting holes as shown *in Figure 3.* Use a plumb line or level to insure vertical alignment. Allow a minimum of 2" beyond the 1 7/8" dimension to provide ceiling clearance. Screw in the No. 8 wood screws (provided) allowing about 1/2 inch clearance between the heads and the wall. Place the cabinet into position and, allowing the screw heads to enter the slots in the back, move the cabinet downward until the screw shanks are wedged in the slots.

Connection to the speaker is made at the terminal board located at the top of the cabinet. The 70-volt CV line output terminals of the amplifier are connected by means of suitable speaker cable. To select the desired power output, move the SPEAKER WATTS link to the proper terminal. Refer to the Stereo Phonograph Installation Manual for placement and connections of complete speaker system.

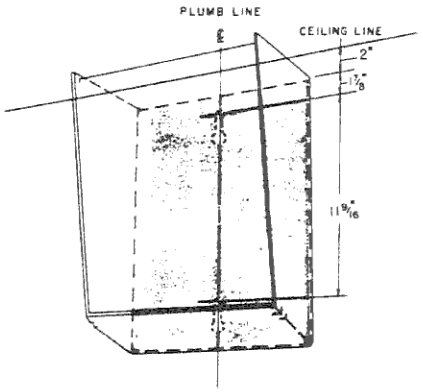
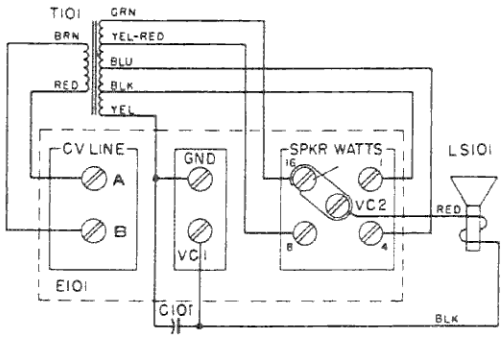


Figure 3. Speaker Mounting



PARTS LIST

Part No.	Part Name
502830	SPEAKER HOUSING
502848	TRANSFORMER (T101)
502850	TERMINAL PANEL (E101)
87671	CONDENSER (C101)
502842	8 INCH SPEAKER
502851	SPEAKER HOUSING BACK

SEEBURG

CORNER ADAPTER, Type "CA1"

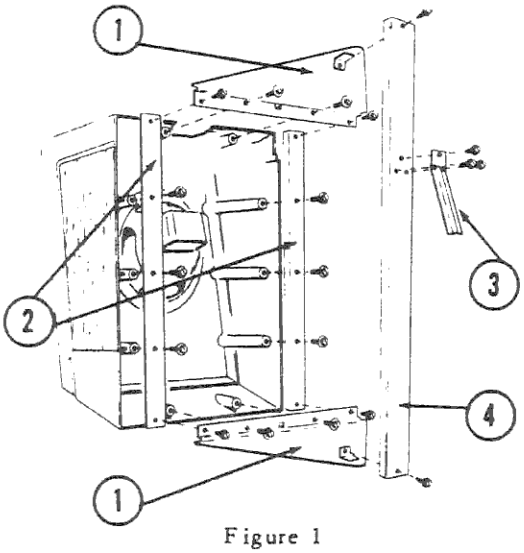


Figure 1

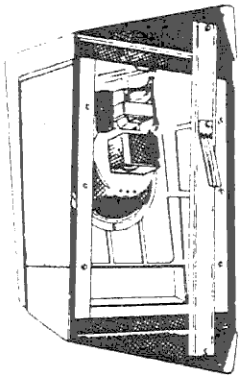


Figure 2

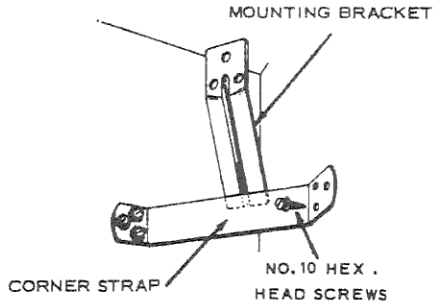


Figure 3

PARTS LIST

Item No.	Part No.	Description
1	502874	End Plate Assembly
2	502872	Side Rail
3	502726	Mounting Bracket
4	502877	Channel
-	502718	Corner Strap
-	502880	Mounting Screw Kit
-	960980	8-32 X1/4 Slotted Indent. Hex Washer H. Self Tap. Screw

The Seeburg Corner Adapter, Part No. 502881 is to be used in converting the TW1 series Seeburg Twin Stereo Speakers so they are the same as type TC1-8C1 and TC1-8C2 for corner mounting.

The adapter is shipped disassembled as a package of 2 each and must be put together as shown in *Figure 1.*

The speaker housing back is then removed and the corner adapter screwed in its place *(Figure 2).*

Attach the mounting strap to the wall with the No. 10 self tapping screws (two different lengths are provided). A minimum of 11 inches should be allowed between the ceiling and the top of the mounting strap to insure sufficient clearance so that the cabinet may be lifted high enough for the cabinet hanger to clear the mounting strap *(Figure 3).*

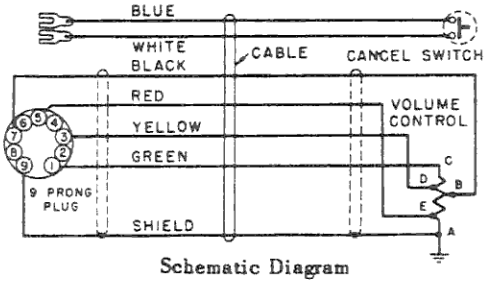
SEEBURG

MASTER REMOTE VOLUME CONTROL, Type MRVC-3

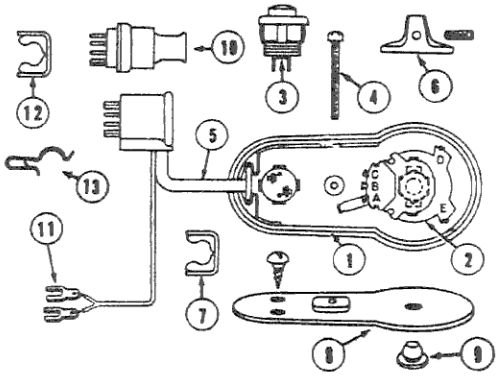
The Master Remote Volume Control, Type MRVC-3 is an accessory which may be used with the Seeburg Select-O-Matic phonograph to remotely control its volume and to cancel selections. Although equipped with 60 feet of cable, inherent loss compensation permits as much as 100 feet with no appreciable loss in frequency response.

INSTALLATION INSTRUCTIONS

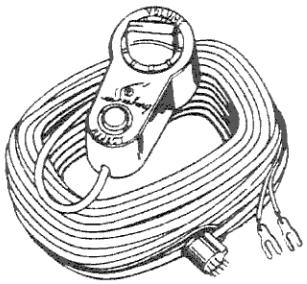
1. Determine location of the Remote Volume Control and best routing for the cable, keeping in mind appearance and possibility of physical damage to the cable as well as convenience of control.
2. Open the back door of the phonograph. Replace the 9-prong local volume control plug in the Tone Control Unit with the 9-prong plug on the cable of the remote volume control.
3. Connect the two spade lugs of the cable to the number 2 and 3 terminals, respectively, of the remote record cancel terminal strip on the Power & Control Unit. If it is desirable to deactivate the phonograph cancel button, open the jumper between terminals 1 and 2.
4. Clip the cable clamp (item 13) on to inside of 6L6 tube panel cut-out over the word POWER. Arrange the cable from the plug so it feeds through the cable clamp and passes through the notch in bottom center of the cabinet.
5. Fasten the cable to the wall of the cabinet with one of the clamps, allowing enough slack cable in the cabinet to avoid strain on the cable or plugs.



Schematic Diagram



6. Lay the cable from the cabinet to the Remote Volume Control, passing the cable loosely over pipes and through necessary holes in walls and floors.
7. If the control box is to be permanently attached, remove the bottom plate by unscrewing the center bolt, and fastening with No. 8 wood screws. Then remount control box to the plate.



If portable usage is desired, press the three rubber feet supplied into the holes in the bottom plate.

8. Fasten the cable securely, starting at the control with a clamp adjacent to the control box. Take up excess cable as it is fastened.
9. When the cable is installed, excess cable can be coiled or folded in the cabinet. Leave enough slack to permit moving the phonograph from the wall for maintenance and cleaning.
10. If it is necessary to disconnect the Control to pass the cable through holes in walls or floors, prepare it as shown in Figure A and reconnect it according to the diagram. Solder all connections. *Do not use acid core solder or acid solder flux.*

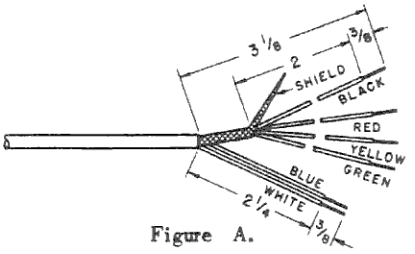


Figure A.

PARTS LIST

Item	Part No.	Part Name
1	503883	Control Box Assembly
	503884	Control Box
2	503185	Volume Control (25K)
	941722	Solder Lug
	925712	Lock Washer
	904801	Nut
3	503885	Selection Cancel Button
4	913675	6-32 x 1-3/16 Ph.H.M.S.
5	503888	Cable Assembly
6	305315	Knob
	918580	Set Screw
7	301146	Strain Relief
8	503890	Bottom Plate Assembly
	402098	Cable Clamp (10)
	971170	No. 8 x 5/8 R. H. Wood Screws (13)
9	503183	Rubber Feet (3)
	503191	Cable Only
10	305322	9-Prong Plug (Replaceable)
11	940490	Spade Lug
12	503182	Strain Relief for 305322
13	409974	Cable Clamp

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SEEBURG

REMOTE STEREO VOLUME CONTROL, Type RSVC-1

The Remote Stereo Volume Control, Type RSVC-1 is an accessory which may be used with the Seeburg Stereophonic Select-O-Matic phonograph to remotely control the volume of both channels and to cancel selections. Although equipped with 60 feet of cable, as much as 100 feet may be used with no appreciable loss in frequency response.

INSTALLATION INSTRUCTIONS

1. Determine location for the Remote Volume Control and best routing for the cable, keeping in mind appearance and possibility of physical damage to the cable as well as convenience of control.

2. Open the back door of the phonograph. Replace the 9-prong local volume control plug in the amplifier with the 9-prong plug on the cable of the remote volume control.

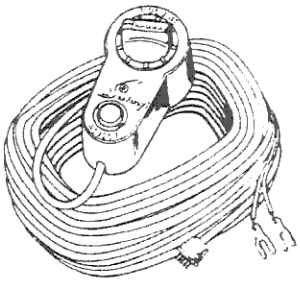
3. Connect the two spade lugs of the cable to the number 2 and 3 terminals, respectively, of the remote record cancel terminal strip on the Format Selection Unit. If it is desirable to deactivate the phonograph cancel button, open the jumper between terminals 1 and 2.

4. Arrange the cable from the plug so it feeds through the cable clamp and passes through the notch in bottom rear of the cabinet.

5. Fasten the cable to the wall of the cabinet with one of the clamps, allowing enough slack cable in the cabinet to avoid strain on the cable or plugs.

6. Lay the cable from the cabinet to the Remote Volume Control, passing the cable loosely over pipes and through necessary holes in walls and floors.

7. If the control box is to be permanently attached, remove the bottom plate by unscrewing the center bolt, and fastening with No. 8 wood screws. Then remount control box to the plate.

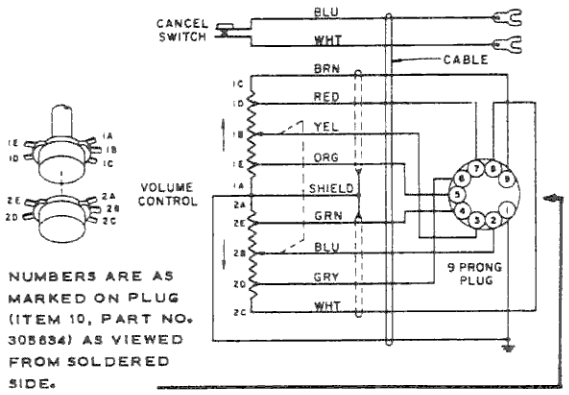


If portable usage is desired, press the three rubber feet supplied into the holes in the bottom plate.

8. Fasten the cable securely, starting at the control with a clamp adjacent to the control box. Take up excess cable as it is fastened.

9. When the cable is installed, excess cable can be coiled or folded in the cabinet. Leave enough slack to permit moving the phonograph from the wall for maintenance and cleaning.

10. If it is necessary to disconnect the Control to pass the cable through holes in walls or floors, prepare it as shown in Figure A and reconnect it according to the diagram. Solder all connections. *Do not use acid core solder or acid solder flux.*



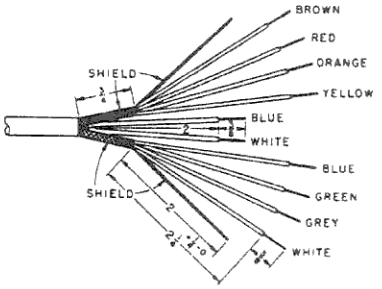
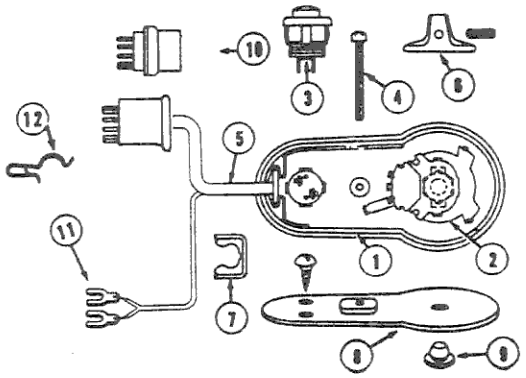
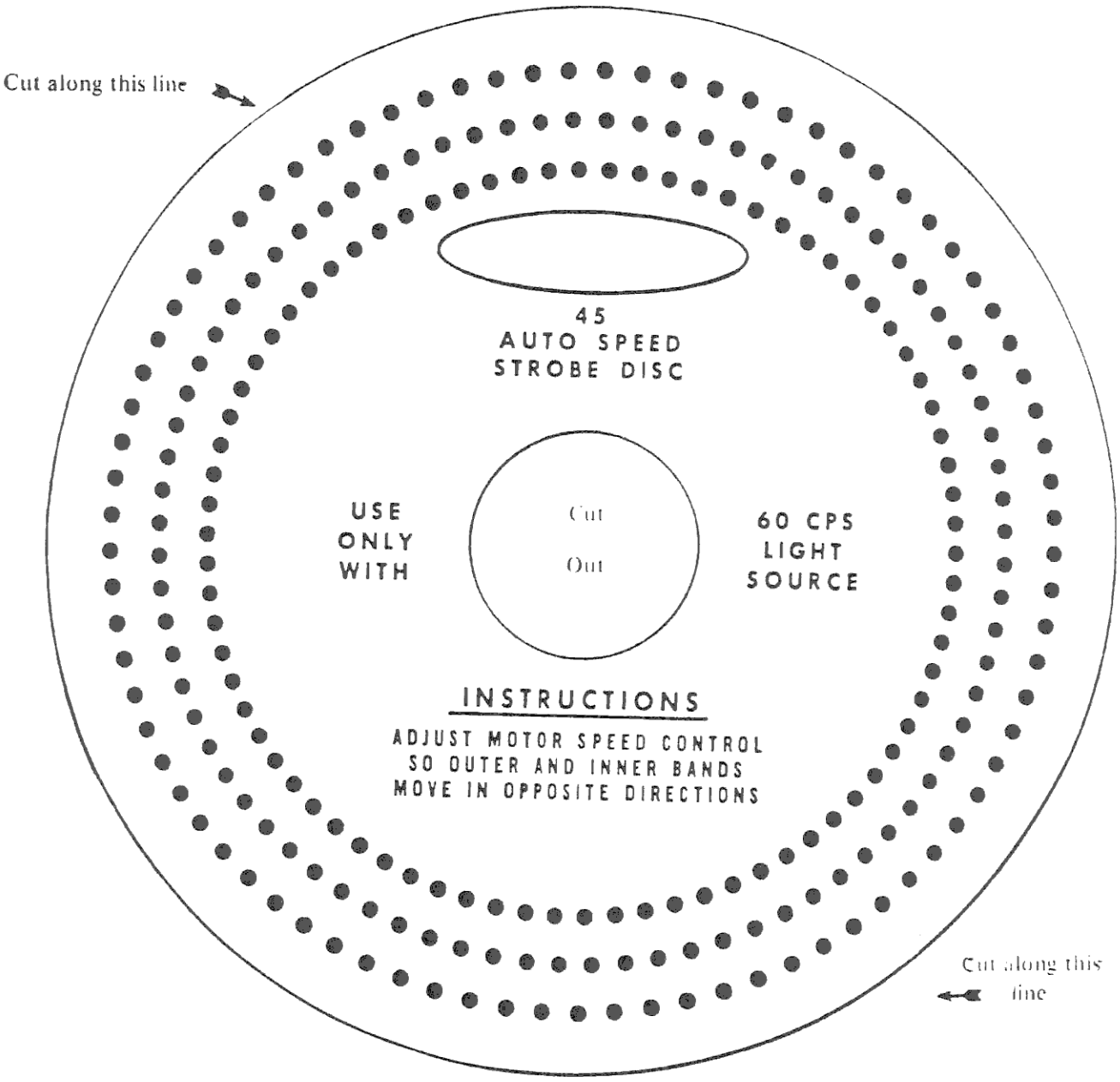


Figure A.



PARTS LIST

Item	Part No.	Part Name
1	503999	Control Box Assembly
	503884	Control Box
2	503990	Volume Control
	941722	Solder Lug
	925712	Lock Washer
	904801	Nut
3	503885	Selection Cancel Button
4	913675	6-32 x 1-3/16 Ph.H.M.S.
5	503993	Cable Assembly
6	503988	Knob
	918580	Set Screw
7	503991	Strain Relief
8	503995	Bottom Plate Assembly
	402098	Cable Clamp (10)
	971170	No. 8x5/8 R.H. Wood Screws (13)
9	503183	Rubber Feet (3)
	503994	Cable Only
10	305634	9-Prong Plug (Replaceable)
11	940490	Spade Lug
12	409974	Cable Clamp


Cut along this line
45
AUTO SPEED
STROBE DISC
USE
ONLY
WITH
Cut
Out
60 CPS
LIGHT
SOURCE
INSTRUCTIONS
ADJUST MOTOR SPEED CONTROL
SO OUTER AND INNER BANDS
MOVE IN OPPOSITE DIRECTIONS
Cut along this
line

ADJUSTMENT OF TRANSISTORIZED AUTO-SPEED UNIT, TYPE 45TASUI

1. Replace a record with Part No. 487388 Strobe Disc, backing it up with a record if necessary.
2. Select Strobe Disc on to the mechanism turntable and carefully prop pickup arm out of the way.

3. Allow unit to run approximately 3 minutes.
4. Set the motor speed to 45 RPM. by adjusting the Motor Speed Control so that the outer and inner bands on the Strobe Disc move in opposite directions.
5. Remove the Strobe Disc.